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APPROVAL OF THE DOSIMETRIC INSTITUTE OF MEDICINE OF PARIS, 1886
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ELEMENTS OF THERAPEUTICS AND PRACTICE

ACCORDING TO THE

DOSIMETRIC SYSTEM

BY

DR. D'OLIVEIRA CASTRO

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THE AUTHOR DEDICATES THIS WORK

TO THE ILLUSTRIOUS

DR. BURGGRAEVE,

AUTHOR OF THE DOSIMETRIC SYSTEM OF MEDICINE,

Officer of the Order of Leopold of Belgium and of the
Order of Christ of Portugal,
Commander of the Order of Charles III of Spain,
Professor Emeritus of the University and
Principal Honorary Surgeon of the Civil Hospital of Gand;
Titulary Member of the Academy of Medicine of Belgium,
Honorary Member of the Society of Russian Physicians of St. Petersburg;
Corresponding Member of the Society of Surgery of Moscow,
of the National Society of Surgery of Paris, of the
Royal Academy of Medicine of Madrid;
Foreign Associate Member of the Academy of Sciences of Lisbon,
Corresponding Member of the Society of the Medical Sciences of Lisbon,
Corresponding Member of the Imperial Academy of Rio de Janeiro,
Original Member of the Society of Medicine of Gand,
Corresponding Member of different Medical Societies of Belgium, etc.
Civic Cross for fifty years of public services.

TO

M. CHARLES CHANTEAUD,

Chevalier of Charles III, Commander of Isabella the Catholic,
Commander of the Order of Christ of Portugal,
Pharmacist of the First Class in Paris,
Sole Preparer of Dosimetric Medicaments.

PREFACE TO THE AMERICAN EDITION.

THIS translation has been made for several laymen of New York and Boston who, having derived great benefit themselves from the daily use of the alkaloids as recommended by Dr. Burggraeve, are desirous of bringing this admirable book to the knowledge of the physicians of the United States.

The new method of treatment of disease described in this book is called Dosimetry—that is, the medicine of small doses mathematically measured. The granules contain accurately weighed quantities of simple substances whose chemical composition is invariable, whose effects are always the same, and are such that they can be calculated with great certainty in advance.

These substances are the active principles of the plants, and are, for the most part, crystallized alkaloids.

Dr. Burggraeve, an eminent professor of the University of Ghent, is the author of this new method of medical treatment. He was the chief surgeon of the Hospital of Ghent, and many years ago was deeply impressed by the great mortality among those who had been operated upon. He found that about two thirds of them died in consequence either of traumatism or of purulent infection. Later the antiseptic dressings of Lister reduced the mortality to fifteen and twenty per cent. Subsequently Dr. Burggraeve, by his alkaloido-therapeutic treatment, both preventive and curative, brought the mortality down to two and a half and five per cent, where it has since been maintained.

He judged that the traumatic fever was due to a stoppage of blood in the capillaries, caused by a paralysis or a fatigue of the vaso-motor nerves which control the circulation.

He thought that, by restoring to these nerves their tone and improving their vitality, he would bring back the circulation to its normal condition and put a stop to that stagnation of the blood which is at first a source of heat and then of inflammation, and thus becomes the origin of congestion, changes of texture, and finally of lesions.

He recalled to mind a successful treatment of intermittent fever and cholera in Russia, in 1832, by Dr. Mandt, of St. Petersburg, described in a memoir upon Indian cholera, which was read in 1854 by Dr. Everard before the Royal Academy of Medicine of Belgium.

The Academicians paid no attention to this memoir, they did not even discuss it, the cholera epidemic having ceased. Dr. Burggraeve, however, found in this memoir material for serious study, and he decided to apply Dr. Mandt's methods to the fever cases which came under his charge in the Hospital of Ghent. He, however, substituted alkaloids for the substances of the plants which Mandt had used. He gave to his patients strychnine in small doses, repeated at short intervals, to give tone to the vaso-motor nerves, and thus to re-establish the circulation of the blood. At the same time with the strychnine he gave small doses of aconitine and veratrine, to lower the temperature and stop the fever. He thus made the discovery that it is sometimes possible to prevent the fever, very often to jugulate it, and always to check the fever syndrome.

Encouraged by this success, he studied upon himself and others the effects of the different alkaloids which he thought suitable to introduce into therapeutics.

In his "Manuel di Pharmacodynamie" he describes, in a summary manner, the physiological and therapeutic action of the principal agents employed in dosimetry. He also established some simple rules of treatment, simple in form but of the greatest value in practice. In each disease he distinguishes two periods: the first, dynamic, presenting only functional disturbance; the second, organic, accompanied by a change of tissue. It is in the first period that the physician should use the most active means possible to jugulate the disease, or cause it to abort. From this Dr. Burggraeve educed his rule to give to an acute attack an acute treatment, and to repeat the small doses until the desired effect is obtained, independently of the quantity of medicine administered, thus doing away with the ideas of maxima and minima, which have been regarded as axioms (especially when employing the alkaloids), and which are as great hindrances to success as are the massive doses which are currently employed for certain drugs.

Small doses facilitate the absorption of the medicine, and make it certain that the needed quantity shall not be exceeded.

The disease may be considered as a resistance to the remedy, or a resistance of the human organism, in a state of disease, to the remedy. The dose should therefore be adapted to the morbid resistance. This adaptation can not be known beforehand: the organism and the condition of the patient can alone indicate it. The dosimetric physician has thus the route he is to follow clearly traced before him by the imperious indications of the facts in the case. He is in no danger of an imprudence by giving too much of the remedy, because he stops it or gives it less frequently when the useful effect he aims at begins to be accomplished; and, on the other hand, he is not held back in his treatment by timidity, for he is guided by Dr. Burggraeve's invaluable rule to continue giving the remedy until a useful or sufficient effect is obtained; that is, a result which is sensible to the patient or appreciable by the physician. One granule too few may prevent the desired effect; one granule too many, by increasing that effect a little, can not do harm.

As Prof. Laura says, in his "Journal Dosimetria": "Observation and experimentation are thus the two masters that never deceive. The experimental method has become the sovereign method in medicine."

There can be no exact treatment without an exact clinical knowledge and an exact remedy. The exact remedy can only be had in the simple principles of the medicinal plants, i. e., in their alkaloids. Dr. Burggraeve found that, by administering the necessarily small doses in a liquid form, there was a too rapid absorption by the mucous membranes of the throat, etc.; he therefore adopted the form of the granule, and he applied to a well-known and very skillful pharmacist, M. Ch. Chanteaud, of Paris, to assist him. M. Chanteaud prepared the granules containing the different alkaloids. They are easily soluble, and are unalterable except when exposed to dampness. Each granule contains, according to the case, a half-milligramme, or one milligramme, or one centigramme of the active substance. These quantities correspond to $\frac{1}{130}$, and $\frac{1}{65}$, and about $\frac{1}{6}$ of a grain English.

These granules are composed solely of the alkaloids mixed with and protected by sugar of milk. They are rapidly dissolved by the juices of the stomach, and are absorbed within ten or fifteen minutes, so there is no possibility of an accumulation, as sometimes happens with pills; especially as there is, in the dosimetric treatment, a *lavage intestinale* every morning by taking a teaspoonful or less of Sedlitz Chanteaud (neutral sulphate of magnesia), which has the triple good effect of acting on the digestive tube, on the kidneys, and on the skin.

D'Oliveira Castro writes (in another book) that the dosimetric granules are of such purity and so regular in their action that too great praise can not be given to M. Chanteaud for the courage with which he devoted himself to the reform of Dr. Burggraeve, but still more for the constancy with which he has maintained the purity of his products.

There are, unfortunately, many imitations, and some very poor ones, now offered for sale both in Europe and America; and their use would bring discredit upon dosimetric treatment. The sole agents in the United States for the Chanteaud granules are Fougéra & Co., of 30 North William Street, New York.

These granules do not deteriorate if kept from humidity. D'Oliveira Castro states that some of them which he had on hand for six years preserved intact all their organoleptic and therapeutic properties.

The hesitation which many physicians show to using the alkaloids in their general practice seems strange when we consider that, for their hypodermic injections, they employ exclusively these active substances that are chemically defined; and that, for this purpose, they never use extracts, decoctions, or electuaries. Why should the cellular tissue be given the prerogative of a treatment by simple substances, easily absorbable, while the intestinal mucous membranes are rudely attacked by gross and irritating substances, whose absorption is often difficult?

If their hesitation proceeds from the fact that they regard these alkaloids as poisons, this may be justified to some extent, for the reason that in allopathic practice there are numerous examples of poisoning by their use; but not one case can be cited in dosimetric practice.

There are now in Europe more than three thousand physicians who use the dosimetric treatment; many of them have done so for several years, and, in the thousands of cases which they have reported in the dosimetric journals, there is not one case of poisoning by the alkaloids. As Prof. Laura says: "In dosimetry, poisoning is materially impossible."

The dosimetric medicaments should always be given by small successive doses, proportioning the dose to the tolerance of the patient, and they are to be suspended or given less frequently as soon as the physicotherapeutic effect is obtained; consequently, a toxic effect is never reached.

Dr. Burggraeve says it is only the abuse of these medicaments which provokes a toxic action.

Dr. D'Oliveira Castro shows elsewhere how a patient may take successively or at proper intervals more than sixty granules of aconitine without feeling the physiological effect, and still less any toxic effect, or more than toxic.

In order that therapeutics should derive the greatest benefit from the use of the active principles of plants, it was necessary that Dr. Burggraeve should teach the profession how to use them, not only without danger, but in the most profitable way.

He has thus deserved the title of Reformer of Therapeutics.

About fourteen years ago he founded a monthly journal in Paris, "Le répertoire universelle de médecine dosimétrique."

It contains the report of cases treated dosimetrically by allopathic and other physicians in all parts of France and of some other countries.

There have subsequently appeared similar dosimetric journals in Italy, Spain, Portugal, England, and Holland, and very recently in New York.

Dr. Burggraeve has written many important books on the subject; a list of some of them is given in this work; and, although now in his eighty-second year, he is still an indefatigable writer and a hard worker.

A most useful book is the "Compendium de Médecine Dosimétrique," by Dr. Van Renterghem, of Goes, Zealand. It is chiefly devoted to the therapeutics of the active principles of plants.

Prof. Laura, of the School of Medicine of Paris, has in press a treatise of "Pharmacodynamie Comparée." He says that his life for twenty-five years has been devoted to the hospitals, to instruction, and to his private practice. During eighteen years of this time he followed the rules of the regular school of medicine, but for the past seven years he has devoted himself to the study and practice of dosimetry exclusively. This work, treating of comparative pharmacology, is the fruit of his professional career. He compares the results of his later years with the earlier period of his practice.

He says that he is profoundly and seriously convinced that this new dosimetric method is a grand progress in the science and art of medicine, that it restores to the physician an abiding faith in the curative powers of his art, while it spares him the dangers of an excessive treatment, and that it renders to suffering humanity services much superior to those of ordinary medicine.

The dosimetric method contains the germ of a perfection which time and science will develop from year to year. Happy are those who are young in the medical profession: they will see some marvelous things in therapeutics!

The present translation has been revised by Dr. Jules Grand, an eminent physician of the École de Médecine de Paris, who has for some years followed the dosimetric practice. It has also been read and approved by the author, Dr. D'Oliveira Castro, who is a good English scholar.

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INTRODUCTION.

THE work of Dr. d'Oliveira Castro, which received the grand prize of the Dosimetric Institute for 1885, is the complement of the prize essays of Dr. Laura and Dr. Van Renterghem. Prizes were awarded to each of these three works: to the first, in connection with *therapeutics;* to the other two, in connection with *materia medica.* Together they form the ways and means of a well-adjusted medical budget. Practitioners will find in them all necessary directions for the treatment of acute and chronic diseases according to the dosimetric system. With such guides they should never have occasion to hesitate; and they will escape the contradictions which the classic authors experience—of whom one might say, *tot capita, tot census* (as many opinions as there are individuals), if, like Julius Cæsar, they give as an excuse the famous "*Veni, vidi, vici*" (I came, I saw, I conquered).

The adversaries of the dosimetric system decry the simplicity of its means: "Always strychnine! aconitine! veratrine! digitaline! hyoscyamine!" As if the dosimetric medicaments were like the allopathic ones. With the latter the prescription must constantly be changed, because for the natural malady it substitutes an artificial one, as the word *allopathy* indicates. Dosimetry has also been reproached with the charge that it merely regarded symptoms, as if disease were an entity for which there were specifics—mercury standing for syphilis, salicylate of soda for articular rheumatism, etc.

In dosimetry we regard the *dominating* and the *varying*—in other words, it is the treatment of causes and effects. If the first are often obscure, so that one might say, "Felix qui rerum poterit cognoscere causas" (happy he who will be able to comprehend the causes of things); the second, the effects, are constant. Symptoms are the basis of treatment, as was well expressed by the celebrated author of "Symptomatology, or Morbid Conditions"—"It is so unusual to cure, while it is always urgent to relieve." By the dosimetric system suffering can always be relieved and fever subdued, and it is upon this "jugulation" that the system is based. Munaret has said of it that it is an old fashion of the Greeks renewed, for it dated back to Hippocrates. If one shall object, "How can one fight with an unknown enemy?" the answer would be, we are doing that most of the time, and this is the cause of the differences which prevail among classic authors. Open the work of Prof. Spring, for example, and you will see that, where he believed he was making the history of the medical science, he was pronouncing a criticism which was the truer because it was unconscious, for Spring, as a professor, was faithful to the "*magister dixit*," and he died of variola, a victim to his convictions that this disease can only be combated in its symptoms. D'Oliveira Castro, on the contrary, proves that the poisoning of the blood in this disease may be combated, as the source of the trouble, by the sulphide of calcium as the *dominant*, and the defervescing alkaloids as the *variant*. That there are parasites, microbes, we do not deny; but are they cause or effect? In typhoid fever there are also proto-organisms; will any one say that this fever can not be arrested in its evolution?

Where can these infinitely small organisms not be found? An enthusiast on the subject of microbes set up his microscope on a street-corner in London, and for a penny allowed each new-comer to examine a drop of water which, to the naked eye, was pure and limpid.

Under the microscope it swarmed with monsters which attacked and devoured each other. It was a sermon to the crowd against water, as effective as Father Mathew's sermons against gin. Could not one tell an equally alarming tale concerning the liquids of the allopathic pharmacies, covered with mold and in active fermentation? Thus, to the microbes of the disease one must add the microbes of the remedy, while the alkaloids of the dosimetric system destroy both.

The duration of the treatment is not a matter of importance; that which is important is, that the patient run no risks. In dosimetry crises are not recognized, because vital reactions are battles in which the results are uncertain and contain an element of chance.

These are the views which have guided Dr. D'Oliveira Castro in the composition of his book. Being addressed to practitioners, it is sparing of theories, preferring to go straight to the facts. Let us also believe that this book, as well as those of Laura and Van Renterghem, will be found upon the table of every physician who desires to succeed in his cases, *cito*, *tuto*, *et jucunde* (quickly, safely, and agreeably).

DR. BURGGRAEVE.

PROLEGOMENA.

LIFE—DISEASE—MEDICAMENTS—CURATIVE ACTION—THE THERAPEUTIC PLAN.

PROLOGUE.

When a man takes the trouble to write a book, and has the courage to publish it, it must be to carry out a motive of some kind or other, whether it be the hope of applause, the desire to be useful, or the necessity of satisfying the conscience, in filling what one believes to be an important *lacuna* in literature.

In the author's case, it is not an urgent desire to write which is responsible for this book, for he has had hardly time to experience any joy or satisfaction in writing; nor has it been a desire for glory, for he is quite conscious of his insufficiency.

It is a recognized fact, however, that there is in dosimetric literature a *lacuna* of considerable dimensions. When the physician brought up in the precepts of the schools, but losing their illusions at each step in his practical career, feels skepticism and unbelief surrounding him, clouding his faith in science, dampening his enthusiasm for struggling, and strangling that zeal which is an earnest of victory, he looks around in search of a plank for safety in the midst of this wreck—for a light which alone may illumine the most difficult and the least agreeable of all the professions.

Outside of the walls of classic medicine appear, on one side, the structure of Hahnemann, battered and almost demolished by positive criticism, or expectation, seeking in vain to conceal its deplorable weakness; and, on the other, the reform of Burggraeve, growing and filled with sap, ingrafted upon the experimental method, and nourished by the purest juices of chemistry and physiology. Under all these circumstances the physician finds himself drawn along by reason, and compelled to yield to necessity; but the novelty of the principles of the reform, the energy of its means, the strangeness of its results, all these arrest his attention and impose upon him a prudent reserve. The most natural way to inform one's self in regard to the practice of dosimetric medicine would be to read the books which contain its doctrines. But the truth is, that the dosimetric library still wants a treatise which shall teach the practitioner to draw practical consequences from the principles formulated by the venerable head of the dosimetric school.

The "New Manual," written in 1877, is not only too much abridged on certain points, but is no longer on a level with the progress which has been reached by certain disciples of this school, whose most effective work has been conceived and given to the world since the manual was published.

Books on therapeutics age quickly, however positive their teaching may be; for, whatever the utility of a medication or the efficiency of a medicament may be, improvements are always supposable.

The new substances introduced into the therapeutic arsenal, or medicaments more effective than those already known, new modes of administration, unforeseen results from combinations hitherto untried—all these constitute an important capital of forces which one can use against disease, and which the practitioner can not and ought not allow to remain unproductive. Periodical publications appear and are forgotten, and do not always present the fruit of experience in its maturity. To be first on the ground, one is often content with a hastily prepared exposition. Besides, practitioners can not read everything, nor submit every novelty to the test of experiment. Hence the necessity of condensing everything which is worth preserving in print, and that is the plan which we have followed. Using alkaloids every day, we have employed them in all the diseases which we have been called upon to treat. This book is therefore only the exact reproduction of our daily practice, with the exception of certain rare diseases which we have had no occasion to treat, but for which we have formulated treatment in accord with the rules and indications of Burggraeve, or his most esteemed followers. Written from day to day, between professional calls, this book is ever the narrative of our practice; in that alone is its unity. We have always endeavored to be clear and truthful, though we might be neither wise nor learned.

We hope that this effect will not be without some useful result, and we shall be satisfied if we shall be able to guide the first steps of those who desire to follow the paths of dosimetry after having left other schools with their illusions. Our satisfaction will be complete if this effort shall stimulate some one more competent than ourself to produce a more perfect and meritorious book. We do not dread criticisms, nor do we hope for eulogies; our only ambition has been to be useful, and in pursuance of this end we have endeavored to show the indications in each form of disease, without any other regard for style than that of clearness.

The plan of the book is a simple one. In the first part we give certain general considerations, to warn the neophyte against the astonishment which may be caused by the novelty of certain applications, or the boldness of certain principles which are far different from anything which he has hitherto been taught. In the second part we refer to the principal indications which are ordinarily presented in different diseases, and the means for satisfying them. In each chapter we insist upon the particular agents which are most useful to know, in such a way that the book may perhaps be considered as intermediate between a dictionary without the complete want of connection in the parts which a dictionary presupposes, and a treatise without the regular method of such a work. It is for this reason that the title of "Elements" has been chosen, in order to indicate that our ambition has been to serve as a guide for beginners, and a stimulus to those who can produce a more complete work than ours.

This book is not intended to instruct beginners in medical studies, but only to enlighten the physician who desires to become acquainted with dosimetric treatment. All that is common to this system and regular practice is omitted, only the differences in the two therapeutic methods being described. The kind indulgence of the reader is desired.

DR. D'OLIVEIRA CASTRO.

DEÇA DE PALMEIRA, *August 12, 1885.*

PROLEGOMENA.

THE disposition of the physician is to neglect the study of the philosophic problems which surround his science. It tends, on the other hand, to regard exclusively their practical application in so far as they are sanctioned by his own experience and that of others. Although he endeavors to disregard all speculative notions as to the origin of the phenomena which he encounters at every step, yet he can not help reflecting upon the principal points of his science, and investigating the phenomena which arrest his attention, and sharpen his curiosity in search of their first cause.

The reasoning faculty, that endowment of all men, but especially of those who cultivate science, is as necessary to intellectual life as digestion to vegetative life. Bowed over the cadaver with scalpel in hand, opening and dissecting the tissues to seek in their changes for the causes of death, the physician must inquire in vain, must pursue his investigations in vain, for the supreme object of his search, life; this has gone, never to be found. His inquiry as to *what it is* will never be satisfied.

The lesions which have changed the tissues, the profound ravages which the organs have suffered, the strange degenerations which have altered their forms and their relations—these may explain the disease, without giving the supreme reason for death. Between the last moment of life and the first sign of death, what is going on which so condemns to decay a body which is endowed with motion, which stills forever a voice whose tender farewells break our hearts? At this last moment have the lesions become so exaggerated as to destroy vitality, and to render the final struggle with the death-agony unsuccessful?

The physician who, at the pillow of the dying man, follows with painful curiosity the progress of this final scene, watching the heaving of the chest, the contractions of the countenance, the convulsions of the limbs, the fall of the pulse, the elevation of the temperature, suddenly sees the chest at rest, the countenance calm, the limbs motionless; the heart ceases to beat, and the body becomes cold. But can he, with the aid of all these phenomena, declare the secret of life, and the meaning of death? No, he can hear and observe, but in vain. The study of causes belongs to the reasoning faculty; the discovery of the nature of causes to the domain of reason, aided and directed by logic.

The clinician and the therapeutist can not be indifferent to the knowledge which pertains to life, for from this the knowledge which pertains to disease is derived, as well as that which pertains to health, and the means for restoring it. But it is the philosopher more than all others who should occupy himself with this study, for it embraces all nature, not being limited to man in a state of disease. But the physician is also a philosopher. He can not be disinterested in all the questions which are debated in the field of pure science. It is not only a satisfaction to his mind, always eager for truth, but it is a necessity for his practical work, which is never so bold nor so free as when it is illuminated by the light of wisdom and judgment. Empiricism may guide him for want of something better, but it is a blind guide, which leads now to a precipice, and again to an obstacle which can not be overcome.

Unfortunately, when he interrogates science concerning life, he receives so many answers that his ignorance is unenlightened. Opinions the most divergent, and schools the most opposed, have had their proselytes and their proficient advocates. But the independent mind is not satisfied with any of them, nor is it content with following any. We would like to make an end of these divergences, once for all, and, with that end in view, to present an opinion which will defy all doubt, respond to all objections, explain all phenomena, and embrace all facts. Unfortunately, this can not be done; and if we discuss the subject of life it is not with the pretension that we shall fully illuminate the subject, for even the greatest geniuses have failed in that respect; it is only to keep our promise, and express our views sincerely and loyally.

Before entering upon the subject of therapeutics, it is indispensable to have some sort of an opinion concerning life, disease, and medical agents. What we shall say, then, will be nothing but the expression of our views upon these subjects.

The reader will accord to them whatever consideration they may seem to merit.

LIFE.

Life surpasses definition. One knows when he experiences it, and there is no one who does not know the difference between a living and a dead body. It would be useless work for a physician to probe such questions very deeply, were it not that a more accurate and complete knowledge of the nature of life than is ordinarily possessed fits him the better to interfere in connection with its phenomena.

Pathology is a particular manifestation of physiology, just as therapeutics is of pharmaco-dynamics. To understand disease, and to be able to establish a rational and effective method of treatment, we ought clearly to understand the fundamental object of physiology, since upon this notion are based all those with which a physician has to do. In order to give a precise idea of the nature of life, it will be necessary to take as a point of departure certain facts and principles which are recognized as axioms which do not require discussion. The best method, then, will consist in studying the most simple facts, and transferring the results of such study to conditions which are more complex.

Whenever we can discover life, we shall always find that fundamental body, the cell, and an essential function, nutrition, and these are definitely manifested by motion. Growth, assimilation, and elimination do not exist and can not be conceived of without the displacement of the matter of which these rudimentary organisms are composed. But as matter can not exist without motion, as everything in nature, from the vast stars which shine at the extremities of the universe to the invisible atoms which are agitated in the smallest grain of sand, is animated by motion, as everything *lives*, one might say that matter is the essential factor of life.

Matter, some one will say, is inert; but this inertness of matter ought not to be understood in the sense of immobility, but as the impossibility with which matter finds itself endowed of changing, by its own power, its motion.

We can conceive, without too great mental repugnance, that an atom of matter can be in a condition of complete repose, but that which our reason refuses to admit is, that there can be bodies and forms, except as their inherent matter is unceasingly in motion. Imagine, for once, that motion ceases, and all nature will be destroyed, everything will return to chaos. The vast and eternal monotony of the desert would universally prevail, without a breath of air stirring a grain of sand, or a ray of light which would enable one to distinguish between the nearest object and the most distant star. We can conceive a void, but, while matter exists, we are compelled to allow it the property of motion, which is as inherent to its nature as substantiality, impenetrability, and inertia.

The notion of force results from that of motion. A force can not exist without motion, but it is rather the result and the effect than the cause of motion. Therein lies the apparently important difference which creates confusion between the idea of force and that of motion. Motion, being transmissible, has no need for the intervention of forçe as a cause; but forces ought to be considered as effects, which are also motions, for motions alone can produce motions. And just as motions are only causes of motion, so the effects of a motion are causes of other motions, from which it follows that forces may appear to be at once cause or effect of motion.

Matter can not be destroyed or annihilated. Matter always preserves the same mass and the same quality. The motions which animate this matter, and are susceptible of modification, of augmenting energy, and of being transformed into new modes of motion, give way to new forms, to new molecular constitutions, to different chemical and physical properties. The force of inertia may be considered as true motion, as the essential quality of matter, and it should, preferably, bear the name of vibratility. All other motions are ingrafted upon this, being susceptible of augmenting it, but not of destroying it, because it is essential. The others are transmitted, augmented, diminished, decomposed, transformed. *It* remains permanent, while all the others come to an end and disappear. If, then, vibratility is the essential property of all matter, not alone of living matter, it must be concluded that the particular motion which characterizes life is an accessory contingent motion, of which we ought to search the origin out of that which constitutes matter itself. In consideration of what has been said, and what is to be said, we can eliminate from the vital principle all idea of force. In life there are no forces, there are motions. Still less ought we to admit the existence of a foreign substance in the organism which presides over vital acts, and born before the accomplishment of these acts, which it directs according to its fancy. The vital phenomena which we see can only be the resultant of vital movements which transpire in the inmost parts of organized matter. Otherwise, could it be comprehended how life could be transported upon a minute portion of epidermis; could leave one organism and be ingrafted upon another? Could one comprehend how a portion of tissue could be completely removed from an animal and, reapplied somewhere else, could resume its existence as before? The transplantations of periosteum, teeth, of fragments of the skeleton, transfusion of blood, etc., would also be inexplicable if the foregoing proposition were not true.

When one considers, on the other hand, that man, born from a simple cell, does not entirely die at one and the same instant; that there is a capital difference between the suspension of life in the noble organs and a similar condition in the less vital ones; that in spite of the fact that the heart has ceased to beat, the lungs to respire, and the brain to think, the muscles may still be made to contract, the liver may persist in its work of assimilation, and other organs in their function of elimination, one can not help declaring that life is the sum of the elementary lives of the cells, all joined by the intervention of means of communication which secure all the cellular elements to each other, these means being principally the intercellular substance and the nervous system. Nevertheless, the problem thus simplified is not yet solved with sufficient clearness. It still remains under the same form, namely, what is the nature of the motion which determines vital phenomena, which is observed in the most simple organism—the cell?

Let us see whether in the mineral kingdom we shall be able to find any analogous or similar phenomena, which will aid us in forming an approximate idea of what is meant by vital motion.

Suppose we take a bar of magnetic iron. Would some say that there are in it currents and motions? Nevertheless, such is the case, for, wherever polarized forces exist, this polarization can only be accounted for by motions which are exerted in a predetermined way. If iron filings are distributed near each of its two poles, we can see them move and arrange themselves in more or less concentric lines around the two poles, forming a definite figure. To what is this result due? To a force independent of the iron which animates the entire bar? No; for, if we cut the bar, each of its fragments will reproduce the same phenomena as the original, with an intensity which is clearly the same. The force, therefore, resulted from a particular motion in each molecule of iron, the sum of the vibrations producing currents in a way which has been determined. The motion which accomplishes this result is not observed in all bodies, nor yet always in the same substance. On the contrary, a difference in temperature, a modification of the medium, an alteration in the chemical constitution of the bar, or the influence of motions of another kind, will suffice to augment or diminish the magnetic motion, and with it the motions of the bodies submitted to its action. This motion may even cease entirely, the material constitution of the body remaining the same, or, on the other hand, being altered by new chemical combinations. To the particular mode of motion which acts upon molecules of iron the name magnetism or magnetic vibrations is given without explaining the way in which this motion differs from electricity, heat, or light. And this is sufficient, because motion, being a property and not a substance, has no nature or essence.

Vibrations may be counted or measured, but science has not yet been able to define them or otherwise to characterize them. Start a current in a voltaic pile, in the presence of a magnet, and what will be the result? The electrical motion will stimulate the magnetic motion; the affinities of the substances which supply the current for the pile will be modified; and if this motion be transmitted to an animal, it will have an influence upon his power of contractility and sensibility. After a certain length of time it will be necessary to replace the constituents of the pile, and then it will be observed that crystallizations have occurred, the results of chemical combinations and decompositions—phenomena which would not have occurred had electric motion not excited them. Therefore, it will not be very difficult to understand how the phenomena of nutrition, of assimilation, and elimination, are produced—phenomena which constitute the most universal function of all living beings.

It will suffice to conclude that matter in certain appropriate chemical and physical conditions is animated by a certain motion to realize all these phenomena, the *ensemble* of which appears so incomprehensible to us. Life, then, is only an atomic vibration, a particular modality of motion in matter. As in magnetism, electricity, heat, etc., we ignore the characters of this modality, and distinguish it only by its results, which we call *vital*, the *ensemble* of which bears the name of *life*, just as the simultaneous cessation of the most important of them is called death. Around this opinion rally certain homœopaths, certain organo-vitalists, and Burggraeve, the head of the dosimetric school, all of them regarding life as an organism animated by a particular dynamic influence.

What is the origin of vital motion, and what are the conditions which determine it? If life is a vibratory motion, and if matter is inert, vital motion can not begin to appear without first being transmitted.

Now, the vibrations of bodies can only be produced in two ways: by transmission from other vibrating bodies, the motion of which passes into new bodies; or by motions of another kind, which in consequence of certain resistances are transformed into vibratory motions. The laws of molecular vibrations are unknown, but it may be regarded as certain that they are under the influence of the medium, the matter, the dimensions, and the action of other motions. Thus we see friction converted into heat, and that into light, electricity, magnetism, sensation, contraction, and work. Vital motion is transmitted to substances ingested in the process of alimentation, and incorporated by assimilation, and this is accomplished with the more readiness according to their vibratory power. Oxygen, one of the most magnetic of bodies, is indispensable both to animals and vegetables. The latter form the basis of alimentation for man, who could with difficulty adjust himself to a mineral *régime*, although this *régime* could contain all the chemical substances which he loses by assimilation. Vital motion in the individual is sustained by alimentation, which supplies it not only with the elements necessary to renew and increase the tissues, but also with strength, whether it be the direct strength which it carries within itself, or the indirect which it occasions by chemical combinations and decompositions. Thus, fermentations constitute the first degree of that *vitalization* which animates the *ingesta* of the body, and which ought to facilitate their incorporation into the organism.

Vital motion is preserved in the species by the elimination of a living portion of the individual, which is animated with the vibrations characteristic of such species. Thus is explained, not only the perpetuity of species, but also heredity in races and families. The necessity for the participation of the two sexes in the accomplishment of reproduction is another argument in favor of the opinion which has been advanced with respect to *life*. The ovule is a simple organism which must be fecundated—that is, must receive an addition of vital motion, in order to be developed and become a complex being. Hybrid formations can not be conceived of as resulting from two vital principles which are blent in each other, but rather as the result of a vibratory motion which is different from the ordinary one. Life is a motion of the same nature as other physico-chemical forces, but different from forces studied in connection with physics and chemistry. It should not be confounded with heat, electricity, or affinity, from which, however, it does not differ essentially. There are as many different modalities of vibratory motion in matter as in the ether interposed between the atoms of matter. Otherwise, how can one comprehend that the seeds of plants and the eggs of birds must have certain conditions of medium and temperature, in order to germinate and be developed? How, also, that life in hibernating animals is suspended until that degree of external temperature returns which will again start into action their different organs and apparatuses? How, too, the consecutive death of the different tissues in the same animal? How can one explain the influence, which is so apparent, of a great number of external and internal agents upon living beings—an influence which is so profound?

From the foregoing the following definition of life may be accepted as a conclusion: Life is a particular vibration of matter giving rise to particular forms, and manifesting itself by functions which are only the phenomenal expression of this vibration, transformed into physical, chemical, mechanical, or psychical motions. When this transformation is carried on rapidly in almost every part of the living individual, converting vital motion into physico-chemical motions, it is called death. The elements in which life had been preserved die because they are not surrounded by the conditions which are essential to the performance of their functions. Life is not destroyed, however; its motion is not lost. Matter is disorganized, forms new combinations, and vital motion is converted into other forms of motion, viz., affinity, fermentation, liquefaction, etc. Consequently, death is the transformation of that form of vibratory motion which is peculiar to life into other modalities of motion. Having thus explained the origins of life, we can get for ourselves a clearer idea of vital phenomena. Vital motion, which animates each atom of a living substance, determines a certain polarization in the molecules, and hence it is not difficult to understand how cells are formed. As these are composed of different substances, their motion undergoes modifications which correspond to the substances, and gives rise to functions which also differ. But motion is not located in the cell alone; it also animates the surrounding medium, its vibrations being transmitted to contiguous matter with a facility which varies with its vibratile power, and with the resemblance which it has to the element which we are considering abstractly.

Therefore, a group of cells forming a more or less homogeneous tissue, may have a common life without the existence of any particular means of relation and communication between their different elements. Just as the particles of iron filings transmit to each other, by simple contact, the vibrations of the magnet to which they adhere, so the cells are in vital communication by simple contact. But when the vibrations are modified, the motion no longer has a medium which so readily transmits its influence. There must, therefore, be special organs to receive the different vibrations, and convert them into motion of another kind, through the influence of a difference in material composition, and consequently of dynamic action, and thus institute the various functions. As the intervention of rheophores is necessary to convert magnetism into electricity, so the nervous system must intervene to transform nutritive motion, or the vibrations which result from it, into other vibrations which give rise to impression and sensation.

Contractility, then, is nothing but the property which certain tissues possess of transforming vital motion into mechanical work. In the physical world do we not see, in the same way, how heat produces expansion in bodies, which is made use of in so many ways to accomplish work of the greatest variety both as to its nature and its energy? Vitality is the sum of the motions which are peculiar to each vital element. It, therefore, bears a direct ratio to the number of those elements for each tissue. But as these motions can be converted into mental and mechanical work, into heat, affinities, etc., it follows that vitality diminishes in proportion to the work accomplished. In order that equilibrium be maintained, it is necessary that it be furnished with new potentialities of dynamic force—in other words, with elements which are susceptible of receiving a reserve supply of the vital influx for which they will be the more fitted as their energies approach the nearer, in point of resemblance, to the organism in which they are about to enter. Among the vital phenomena we shall also find psychological ones, but for the present we shall not enter this labyrinth, and the more willingly, inasmuch as the physician may put such obscure questions aside, without suffering in his practical work. The nature of these phenomena is most complex. The brain is the particular organ which concentrates all the activities, and which has the power of transforming all sensations into perceptions, into *consciousness.* It is, in a certain way, the general organ of the senses. Thought, the will, are thus the wonderful and incomprehensible result of vital vibrations, just as the electric light is the soul of electricity; a light of the original mode of which we are ignorant, a light which is different from all other lights, a vibration different from all other vibrations. The brain can think and perform its functions only under certain physical conditions. A slight change in its circulation, an imperceptible lesion in its structure, may modify all the psychical phenomena. The concentration of all transmitted motions, the conflict of all these modified vibrations in the track of nervous conductors, give as a result a particular motion, which is called the soul. Just as a lens, concentrating rays of light, produces at its focus wonderful phenomena, so the brain can be conceived of as a concave mirror, where all centripetal impressions are focalized, and upon which are reflected and radiated all centrifugal vibrations.

DISEASE.

After the foregoing statements, it is easy to understand that each cellular element lives, not only in its own life, but also in that which animates all the other elements which are near enough to be moved in the same sphere of activity, and even in those which are remote, with which it has certain communications. There is, then, a reciprocal action of element upon element, of such a character that, when one is perturbed, its echo is perceived in all the others. Life, considered as a force composed of the entire *ensemble*—that is to say, vitality—is therefore the resultant of elementary energies, and the elementary energies are, in their turn, resultants in which the general resultant appears as a factor. But, as the organism can not escape from influences exerted upon its vitality by the external medium, which is constantly varying, and the internal medium, which is equally inconstant; as, on the other hand, vital phenomena are constantly changing the coefficient of vitality of the organism which serves for their field of operation; as, finally, vital motion varies necessarily with the inconstant material constitution of the anatomical elements—it follows that vitality changes every instant under the influence of as many different causes as act upon it in a modifying manner.

The first law of living bodies is, therefore, the continual absence of equilibrium. But, in spite of all the influences which necessarily modify the coefficient of vitality, the want of equilibrium is so little manifested that neither in living matter, nor in the motion which animates it, does it give rise to trouble which is perceptible to the individual. Thus, the functions are executed with regularity, notwithstanding the more or less periodical oscillations which characterize all vital acts, the *ensemble* preserving an apparent equilibrium; for not all the functions are either in action or at rest at the same time. This apparent equilibrium constitutes the condition of health.

When a function is performed with an expenditure of an excess of vital motion, and in such a way that other functions are prejudiced, or when its work requires too much time for its accomplishment, equilibrium can no longer be maintained, the coefficient of vitality diminishes, and we have the beginning of disease.

Between health and disease there is, primarily, no other difference than a marked want of equilibrium, which can not be quickly restored; the question is one of degree and of time.

Disease, at its beginning, is therefore a notable and permanent diminution of the vital motion which animates the organism. All the causes which antagonize the production of this motion are causes of disease. But as motion can never increase, except for a very short time, without a material substratum, it follows that all diseases have an asthenic element. When an augmentation of vital vibrations is produced by any cause whatsoever, the excess is immediately transformed into other mechanical, chemical, or physical motions, and equilibrium is rapidly restored. The easiest way to produce a notable increase of vitality would be to excite strychnism. This is manifested by convulsions—that is to say, an excess of vital motion is transformed into mechanical work, heat, and chemical reactions, which immediately consume the excess of vitality, and re-establish equilibrium, or may even produce a want of equilibrium of an opposite character.

Those who admit the existence of hypersthenic diseases are victims of an illusion, and mistake the apparent for the real. Living matter may be incited and excited. Incitability is the property which it possesses of increasing, to a certain point, the number or the intensity of its vibrations. This functional impulse results in a growth of substance, which establishes, in a permanent manner, this gift of vitality. Incitation is produced in a slow and secret manner, but yields a lasting result. It can only be realized by alimentation, and by weak but prolonged hygienico-therapeutic means. Excitability is the power of displacing vital motion, which increases with excess at some points, while it diminishes at contiguous ones. Excitation is not an increase of force, nor a means of profit nor of wealth. It is a loan which is made by one part of the organism to others. And, as this increase of motion is rapid, and as matter can not sustain it, because it has not augmented to a parallel degree, it is transformed into other modalities of motion, in order to re-establish equilibrium. The borrower is no richer than before, while the lender is impoverished, because nothing is given back. The final result of excitation is consequently, in all cases, an impoverishment of vitality and hyposthenia, and the diseases which show a great expenditure of force are the result of excitation, and are never characterized by hypersthenia.

The sum of vital motion appertaining to each individual being insusceptible of rapid augmentation, unless the substance which is to receive the excess undergoes organization, it follows that all diseases signify diminution of vitality. Consequently, everything which causes a diminution of vital motion is also a cause of disease.

Now, as this motion diminishes by the removal of material substance, by its transformation into other motions, and by certain modifications of the medium in which it is accomplished, it follows that vitality may be attacked by losses of material—for example, hæmorrhages, mucous and purulent discharges, etc.; by the various modes of transformation of motion—for example, exercise, hyperthermia, moral emotions, intellectual work; by meteorological perturbations of all kinds, such as barometric, hygrometric, thermometric changes, etc.

The organism, though exposed to so many influences, feels them all, and, if the want of equilibrium is not pronounced and is soon re-established, it will continue to thrive, being governed by their intensity and its own coefficient of vitality, or, if the test be very long or very severe, it will show a tendency to weakness; and it will become actually sick if the derangement be too great to remain unnoticed.

It is surprising, indeed, that the organism is not oftener diseased, exposed as it is to so many vicissitudes, and that it almost always recovers its equilibrium.

Experience has taught man how to attenuate the most of the causes of disease, and to prevent their effects.

Hygiene, which we all follow mechanically, and the mobility of the vital energies, which rapidly restores harmony among the vital forces, distributing them with regularity, explain how man can resist so many causes, both internal and external, which constantly threaten his health.

From the foregoing considerations it may be concluded that disease, in its initial phase, is always a perturbation, or rather a diminution, of the dynamic influence which animates the organism.

But this dynamic perturbation compels an alteration in the molecular constitution, in the atomic grouping of the living matter. Modifications of nutrition coincide with this alteration of matter, changing the form and the work of the cells. The elements first attacked influence those which are contiguous, and these, in their turn, influence the general vitality. This alteration is resented by the nervous centers, which, on their part, react upon the entire organism, sending out abnormal vibrations which further disturb the regularity of the intimate phenomena of life, and give, as a final result, lesions of substance and structure which modify the local life and the general vitality. Therefore, no perturbation can remain local or simple. It soon becomes the cause of a circle of perturbations, which are constantly increasing in number and in complexity. The most insignificant cause, hardly able at the beginning to produce a dynamic perturbation, may become the point of departure for numerous dynamic and somatic morbid effects.

Diseases, then, are primarily dynamic, but soon become material, because the dynamic influence can not be isolated from matter, and because its modalities forcibly influence the organism. There are, therefore, dynamic and somatic diseases. All diseases must be of both kinds, and in all there is only a predominance either of dynamic perturbations over the material ones, or the reverse. In the first phase of acute diseases, perturbations of vital motion predominate, the material lesions being still insignificant.

If the equilibrium is not re-established, the vital perturbations are superseded by modifications of structure, and organic lesions are constituted. As lesions develop from other lesions, however, and as the changes in vital motion engender other changes, disease is not entirely established, as long as this ascending progression of morbid dynamico-somatic effects lasts, and also this first period of abnormal evolution in which the organism finds itself, and which does not end without establishing an equilibrium—that is to say, a stationary period. But this equilibrium, which is out of harmony with the natural arrangement of the organism, and with the influences of external agents, is quickly disturbed, and then a new phase of difficulty is seen, the evolution of which may be accomplished in the direction of disease, which may become aggravated and complicated, until it results in death; or in the direction of health, which improves as the *ensemble* of the perturbations is simplified and diminished. When equilibrium is restored, convalescence begins, which is equivalent to the incorporation of a new substance, this process continuing until the organism has recovered its normal substance and vitality.

Five periods can be recognized in disease—the dynamic, the preparatory, the constitutive, the period of reparation or of disorganization, and the period of convalescence or of death. The dynamic period lasts from the first perturbation of the vital motion until the appearance of perceptible lesions in the organized matter; it becomes preparatory when these lesions evolve, calling forth secondary, tertiary lesions, etc.; it is constitutive when this evolution is completed, as long as this state of abnormal equilibrium persists; the fourth period begins when the abnormal equilibrium is destroyed, the perturbations now increasing until they become incompatible with life, now diminishing until there is a return to stable equilibrium, compatible with health.

CAUSES OF DISEASE.

Diminution of the vital motion constitutes the first act in the morbid series, the essential primordial cause of all disease. But, as this diminution may be excited in different ways, the causes of disease may be classified into different categories or groups, which are all reducible to three.

The first group includes all the dynamic agents, whether chemical, physical, mechanical, or vital, which have an influence upon the organic dynamic principle. Therefore, heat, light, sound, muscular work, the work of the intellect and emotions, may all influence vitality, by giving rise to different diseases characterized by the morbid effects which are successively produced. Almost all the acute diseases belong to this group.

The second group includes material agents, and, in addition, those which primarily excite modifications in the material composition of the organism. So the want of proportion between the elements which are necessary to the organism, and the quantity of the elements of repair which is furnished to them; the defective elimination of certain products, the incorporation of certain insoluble and non-assimilable substances, transform the material constitution of the organism, producing alterations which are now imperceptible in the vibratory motion, but which sooner or later become appreciable when alterations of matter are extended or multiplied. This is the genesis of many of the chronic diseases. The third group embraces the dynamico-material causes—that is, that class of agents the activity of which is exercised not only by their presence in the tissues, but by the dynamic modifications which they cause there. The invasion of the organism by living agents, whether animal or vegetable microbes, bacteria, the entire class of parasites, realizes this two-fold order of perturbations. In this last category may be classed the alkaloids and other principles which do not merely change the material constitution of the tissues in which they are deposited, but excite direct dynamic perturbations by virtue of their energy. Among all these causes, some act instantaneously or within a short period, and give rise to a simple vital perturbation which either disappears on account of compensatory action by other motions, or is transformed into successive effects, and produces a disease which retains no trace of the nature of the exciting agent. Such are the diseases which are caused by cold, insolations, results of moral emotions, etc. Others, on the contrary, continue for a very long time, and give rise to successive perturbations which change their form and physiognomy according as the susceptibility of the individual is modified by the first perturbations. These perturbations always preserve, among their constitutive elements, the causal one—in other words, among the secondary, tertiary, etc., morbid effects, the primary perturbation can always be recognized, being maintained by the permanence of the cause. This constant element, or this permanent perturbation, which is excited by the cause, is antagonized, in dosimetry, by the *dominant*, appropriate action being based upon the aphorism *sublata causa, tollitur effectus* (when the cause is removed, the effect will disappear). The truth of this proposition is well seen in the parasitic diseases, for example, in indigestions, etc., diseases in which it is necessary to destroy the cause in order that the primary effects may cease, and with them the secondary, tertiary, etc., ones.

There are diseases in which it is impossible to overcome the persistency of the cause, and in which, then, one must counterbalance the primary effects. For example, since we are unable to dissolve a urinary calculus, we must endeavor to annul the spasm, the pain, the congestion, etc., which are due to the presence of the calculus; and we must establish the *dominant*, not against the calculus itself, but against the causes which have made it grow. In other cases, after the disappearance of the original cause, there remains a permanent effect, which acts as the origin of all the others. Disease, being a chain of effects, may lose its first links, without any treatment which is directly aimed at them. Thus, an amygdalitis may be produced by cold, heat, fatigue, or by contact of an irritating substance. These causes will produce an inflammation which will persist long after the causes have disappeared. The *dominant* can have nothing to do with the original cause, which has disappeared from the scene of the disease, but it will operate upon the effect which remains, which is the cause of all the other effects. It will antagonize the element of inflammation, of which the cause may have been cold, or a direct irritation.

The effects of these causes become in their turn the source of new perturbations, and the latter in their turn give rise to new morbid phenomena, which again are multiplied; so that the disease, which started from nothing, is transformed after a longer or shorter period of time into an *ensemble* of diseases, of which the history almost always involves difficulties which are inextricable.

Disease, therefore, is not a distinct entity of the organism in which it is established, though it may determine reactions which tend to destroy it. Disease is an *ensemble* of phenomena, created, either mediately or immediately, by a primary perturbation of the vital motion, or the matter in which it is located. This succession of phenomena obeys laws which control the resultant of forces or of motions. If the organism, having arrived at its greatest development, were in such a condition that assimilation and disassimilation exactly compensated each other; if its work were always the same, not exceeding what it could produce without disturbing the organo-vital equilibrium; if external agents always operated upon it in the same way, and in a way which would be suitable for it—it certainly would never have diseases; and not only would such an organism be without pain, but it would live indefinitely, as long as this *ensemble* of conditions was not disturbed. Unfortunately, life is, itself, one cause of disease, because, with its work constantly varying, it is impossible to furnish to the organism the exact quantity of the elements of repair which are necessary. The organisms which have the most uniform lives are also the ones which preserve it the longest, which explains the fact that certain forms of vegetation reach an age that man can never experience. In order that animal life be preserved for the longest possible period, vital motion must be almost suspended, and the organism be kept as free as possible from external influences. An hibernating animal, which realizes these conditions, to a greater or less degree, could remain in a condition of lethargy for a long period without any apparent modification of a morbid character. But is hibernation life? No, life is not repose nor immobility, but a conflict of motions; life is motion. This is why disease is a modality of logic, and death a necessary consequence of life.

SYMPTOMS AND MORBID EFFECTS.

Whatever be the perturbation of the vibratory motion which animates organized matter, it gives birth to alterations in the organic and dynamic state of the individual. These alterations may be compensated, and then the loss of equilibrium is unnoticed. But if compensation does not take place, they will engender new perturbations, secondary effects of the primary causes of the initial perturbation which the vital dynamic influence has experienced. All these effects, as well as those which follow them, are morbid effects, but are not symptoms. The latter are morbid effects of which the sick person is conscious, or which are discovered by the physician in his examination.

A symptom, then, is always engendered by a perturbation of dynamic influence; and just as the effect of motion is likewise cause of motion, so symptoms give birth to others, and these in their turn to yet others; so that we ought to consider symptoms not only in themselves, but also, and above all, in their natural consequences. The first symptom of a morbid condition is a source of many others, and as this first symptom is the expression of a lesion which is rather dynamic than material, it becomes evident that it is principally at the beginning of morbid conditions that therapeutics has the best opportunity to interfere successfully, for it is more difficult for it to cure than to prevent.

Besides, we always see certain symptoms accompanied by certain others, and we observe, in general, a constant succession in certain groups of symptoms. Does the frequent occurrence of this simultaneity and this order of succession, maintained by the invariability of physiological laws, justify the classification of these natural series of groups of symptoms into different species of diseases, as if they were entities characterized by typical properties? Such a notion is entirely a false one. Disease is nothing but a new manner of being of the organs, which present either new phenomena or different modalities of normal ones.

Herein lies the difference between clinical medicine and pathology: the latter shows us the species and genera of disease; the former compels us to bear in mind that it is not disease, but diseased persons, with whom we have to deal.

The morbid phenomena determined by numerous and different conditions vary unceasingly, according to the varying combinations of these conditions; it is, therefore, impossible to refer diseased conditions to certain types which shall be invariable and uniform. If all individuals had organs constituted in the same manner, and endowed with the same dynamic energy, if climacteric conditions were the same for all, and all could be subjected to the same physico-psychical life, the same perturbation would then produce the same effects in all, in the same invariable order of succession. In such a case there would be as many diseases as there are varieties of initial perturbations, and they could be classified as one classifies chemical reactions.

But this equality does not and can not exist; each case has its particular physiognomy, which distinguishes it from all the others, and therefore justifies the clinical aphorism which has been referred to.

Disease is made up of morbid symptoms and effects. But the relation of causality and dependence which unites these elements often requires that a system of treatment should take cognizance principally of symptoms, not so much on account of the value of the symptom in itself, as on account of the other symptoms which depend upon it, and the morbid effects which it may produce. Symptomatic therapeutics, which in dosimetry bears the name of the *variant*, is more important and more useful than many people imagine. In annulling a symptom one does not confine himself to destroying its effect, and to simplifying the morbid condition, for by this means many others can be avoided, which would naturally and physiologically follow from the existence of the one which was to be suppressed. Symptomatic therapeutics is, therefore, not only curative of a portion of the disease, but preventive, besides, of ulterior morbid phenomena, complications, and aggravations.

MORBID ELEMENTS.

For the observant physician, disease is a combination of symptoms which are linked together, distributed in groups, and determined by their filiations and their dependence.

Every symptom represents a constituent element of disease, but all symptoms have not the same hierarchical value, and do not all deserve to be placed in the class of morbid elements. There are principal and primary symptoms, which give birth to others less important, which readily disappear with them. So pain, which may be only a simple symptom, is very often a true morbid element, since pain frequently engenders spasm, congestion, immobility, hyperthermia, insomnia, anorexia, etc. Remove the pain, and all its attendants will disappear.

It is clear, therefore, that morbid elements are always the basis of a therapeutic indication, since with them disappear also a great number of perturbations, and by simplifying disease we avoid ulterior complications, diminish its gravity, and, at the same time, relieve the discomfort of the patient. The difficulty consists in recognizing, among so many perturbations, those which are the mothers of others, and, in the midst of groups of symptoms which subdivide in various ramifications, to distinguish them by their families, in order to attack each one separately, at the time of the primordial perturbation. One is therefore brought face to face with different and manifold indications which must be satisfied at the same time, not by favoring polypharmacy—that is, making use of many drugs for one disease—but, on the contrary, by using a single remedy for several elementary diseases, whenever it can be done, or at least a single remedy for each of their morbid elements.

Suppose we have a case of congestive neuralgia. In connection with it there are two principal morbid elements which give rise to two independent series of symptoms—the pain which produces spasm, insomnia, etc., and the congestion which produces heat, œdema, and hypersecretions. If we simply antagonize the pain with morphine, the neuralgia itself will offer resistance, or will reappear after a short time ; but if we add aconitine, by which the congested condition is dissipated, we shall obtain a rapid and effective cure. This example well demonstrates the capital difference between polypharmacy, or the excessive use of drugs, which we condemn, and the proper association of medicaments which we must approve and advise.

The morbid element is the cause of symptoms. But whether the symptoms are determined by a morbific cause, or by other symptoms, it often happens that the best way to antagonize the morbid element is to extirpate or to neutralize the cause.

It is, therefore, the causal or pathogenic element, the primordial one, which we ought to annul, as soon as it is recognized, and we have the means of destroying it. But, as the cause is not always present with its effects, as at other times we may fail to recognize it, and at others we may not know how to antagonize it successfully, we shall at times be limited to exerting our efforts against its first effects, its principal morbid elements. These are always, at the beginning, rather of a dynamic than a material character. Thus fever, pain, spasm, exaggeration of the work of elimination, excessive sensibility or contractility, are so many functional dynamic perturbations. They are so many phenomena of excitation and accumulation of vital motion at the expense of certain parts, and from them follow hyposthenias, impoverishment of vitality (in the form of adynamias, anæsthesias, and paralyses), which we might easily avoid, were we to interfere as soon as they make their appearance, by means of defervescents, calmatives, and antispasmodics, which are the principal agents for overpowering (jugulating) disease in its dynamic and preparatory stage, before it is fully developed, and before the dynamic perturbations are superseded by material lesions.

The study of symptoms, their hierarchical classification, their physiological interpretations—for some of them are the manifestation of latent though real morbid effects—will enable us to accurately determine the morbid elements, and to select those which should serve as the object of hygienic or therapeutic indications.

Our practical work will always be more profitable in consequence of this work of analysis and synthesis, without which our system of therapeutics is tossed about at the mercy of a deceitful inspiration. It ought always to be based upon physiological premises furnished by minute study and reflection upon each case.

MEDICAMENTS.

THERE has been much discussion to establish a characteristic difference between foods, medicines, and poisons. This distinction has not yet been established, in spite of the most subtile reasoning, and it is impossible to give an exact definition of each of these classes in such a way as to determine their differential characters. In fact, just as it is difficult to accurately distinguish health from disease, the entire difference residing in a different modality of the same phenomena, in diversity of energy, and in the intensity of the vital acts, so between foods, medicaments, and poisons there is no other distinction than that which follows from the diversity of energy of their effects, and the intention with which they are employed.

Foods, like medicaments and poisons, act upon living matter by their material and dynamic properties. Health is preserved so long as there is equilibrium of the vital motion; but, in order to preserve this equilibrium, it is necessary to compensate the losses which the motion sustains by means of other motions which become confused with it, and to re-establish the changed dynamic influence. Foods act to accomplish this end, and they have no other *rôle* than to furnish the substance and force which the organism expends in accomplishing vital acts. If they are not furnished in suitable form, and at the proper time, the equilibrium is not re-established, the vital motion becomes insufficient, and an abnormal and morbid state is established, which may be readily remedied by alimentation, if its continuance has not been too prolonged. Food, then, is, as it were, the proper medicament for those normal states in which there is want of equilibrium; but it may also act as a poison if it is administered inopportunely and with excess.

Disease, which is a condition of extraordinary want of equilibrium, therefore requires extraordinary means to restore equilibrium. From this point of view medicaments are simply foods for the morbid state, for their sole object is to furnish the organism, either directly or indirectly, with means for preventing loss of equilibrium, or for restoring it after it has been lost. Medicaments which in their action exceed the requirements of the organism, increase the want of equilibrium already existing, by increasing the perturbations, and so become an actual poison, just as would have occurred had a poisonous dose been given in the state of health.

The medicament which accomplishes the desired end is, therefore, a substance which can furnish the diseased organism with the vital energy which is requisite for the restoration of the normal equilibrium.

Just as foods are of different kinds, each kind being intended to satisfy a certain physiological want, or to determine certain modalities of motion, so will medicaments vary with the diseases for which they are required—that is, with the character of the dynamico-somatic alterations which the diseases produce.

What essential difference is there between the phosphorus which is taken into the stomach with the food, supplying nutriment to the bones and the nervous system, and the phosphorus which is contained in the hypophosphites, and prescribed for such conditions as rachitis and nervous prostration?

What essential difference is there between the coffee which we drink every day to support the vital motion of the nervous system, and the strychnia which is given to stimulate the vitality depressed by disease?

In all these cases is there not a demand for an agent which shall satisfy a necessity of the organism?

As all matter is animated by motion, and all motion can be translated into other forms, within certain defined limits, every substance and every motion may alike become a medicament. The secret of the action of drugs consists, then, in a conversion or transformation of motions.

Since vital motion appears to be limited to the organism, and not transmissible by the ether, it is necessary, in order that there may be action on the part of medicaments, that they be in contact with living matter. The latter animated by its special motion, and the former by their specific motion, as they conflict, give a resultant which is determined by the primitive action of each substance. But, as in all the tissues and all the organic elements we find neither the same material constitution nor the same vitality, it follows that the same medicament, in traversing all the tissues and all the elements, will not give the same results nor the same effects in all.

Thus the elective action of medicaments is explained, and the property which each possesses of producing an impression upon some organs or systems, and not upon others.

Vital motion is modified by every substance which comes in contact with living matter. It is for that reason that alimentation does not differ essentially from medication. A more definite difference is that, while alimentation is always material, medication may be exclusively dynamic. Alimentation implies repair of expended substance; medication implies at one time assimilation of matter, at another only modification of dynamic influence. Since dynamic changes constitute the primary character of diseases, medicaments ought to be modifying agents of vital motion, bound to restore to it its original intensity. If medicaments, instead of simply modifying this motion, transform it into others, the loss of equilibrium will increase, and a toxic instead of a salutary effect will follow. The same substance, endowed with its peculiar energy, will at one time produce modification, and at another perturbation. If the changed vital motion can utilize all the energy of the medicament, and transform it into vital vibrations, the vital motion will be modified as it becomes stronger; but if the energy of the medicament, whether from its nature or the quantity used, transforms the vital motion into other forms, vitality will diminish and new perturbations will be developed. There is always, therefore, a limit to the action of a medicament beyond which toxic effect is apparent.

Within this limit the action of the medicament is proportional to the quantity used; beyond it new modes of motion are developed, and the proportion is no longer preserved.

Since all organic elements are interdependent, the primary action of a medicament upon a certain group of elements will be modified in a reflex manner by the influence of other groups. Therefore, the action of a medicament is not the same at the moment when it is first felt as it is subsequently. The modifications which are first effected have a bearing upon those which follow, and produce different results, according as new factors are introduced. The effect of the medicaments which depends altogether upon the substance used, and the dynamic condition of the organic elements upon which they are employed, differs, not only with different individuals, but even with the same individual, according to the time of its application. Medicaments may be classified into three groups: in the first, some, incorporating themselves in the living tissues, act indirectly upon the vital motion by the material modification which they produce upon the organism, since every alteration of substance causes an alteration of force; while others, analogous to foods, by being assimilated sooner or later, increase the total of matter in the individual; yet others, which are true poisons, destroy a portion of the living matter, and only become useful by the disturbing modifications which they cause.

The second group includes substances which, without becoming incorporated in the tissues, act only by contact, by the power of their dynamic properties, upon the motion which is peculiar to living matter. Some of them are dynamogenic, and increase the coefficient of vital motion; others are inhibitory, and diminish or suspend vitality.

The third group includes all substances which act like those of both the preceding groups.

To the first group belong the metals, to the second the alkaloids, to the third the metalloids and the vaccines (*vaccins*).

As the vitality of the different tissues varies greatly, and as the want of equilibrium in the vital motion is not the same in each of them, it follows that the effects of medicaments are not felt in the same way in all parts of the organism, and that there may even be opposite effects in the different groups of organic elements. Therefore, it is not unusual to meet with dynamogenic effects by the side of inhibitory ones, so that one can obtain similar results by different means, and by effects which at the beginning are absolutely contrary to each other.

In order to estimate an effect, it will not suffice to calculate the coefficient of general vitality; it will be indispensable, in addition, to appreciate the particular vitality of each organic element, in each of its factors, during the entire time in which the action of the medicament continues, and during the time in which this action is continued by successive vital modifications. These differences constitute *impressionability*.

The action of medicaments being the result of their dynamic influence upon the vital motion of the organs with which they come in contact, and this result being appreciable or latent, manifest or invisible (although an effect is a result which is always susceptible of verification), it appears that the action of a medicament differs from its effect. The latter proceeds from the former, though this filiation or production may not always be direct. The action of a medicament may have ceased when its effect begins to be manifested. For example, a purgative effect may follow the administration of belladonna or atropine long after their antispasmodic and exciting action upon the longitudinal muscular fibers of the intestine has disappeared. The action of a medicament always exists, whatever be the impressionability of the patient, but the effect depends upon the impressionability of the subject, and the intensity of action of the medicament.

In practical therapeutics one seeks only to obtain results. Since the conditions for obtaining them depend upon the agent which is used, the impressionability of the patient, and the intensity of effect of the medicament, the therapeutic problem is resolved into its simplest expression: (1) By understanding the impressionability of the element upon which it is proposed to act; (2) by determining the quality and intensity of the impression which is desired; (3) by choosing the substance which is suitable for the production of this kind of impression, and calculating its activity—that is, bringing the necessary quantity into contact with the organ to produce the desired impression with the proper intensity.

Therefore, the results depend essentially upon three factors—the patient, the medicating agent, and the dose. But, as one only uses those substances of which the medicinal properties are more or less well known, if one desires to effect a cure, one must determine, above all things, in each case: (1) The impressionability of the patient, (2) the proper dose which is required.

IMPRESSIONABILITY.

In order to be cognizant of the entire impressionability of the patient, we should know with exactness the impressionability of each tissue, in particular of each element upon which the medicament is about to act. But, as each element is in relation and communication with many other elements, if not with all of them, the modification which is exerted by the medicament will differ at each instant, on account of the reciprocal influences which are established between the different animated elements. Hence the impossibility of determining, *a priori*, for the same medicinal unit, the resultant of the modifications which this unit will produce in a given element, and still more in the entire economy.

Sick people, showing as they do the greatest variety both in their material constitution and their *dynamism* (*dynamisme*), may be said to have no characteristic which is equal in all; more than that, the same sick person is not the same in successive moments. Trousseau and Pidoux have related the experience which they had with antimonial preparations in 1831. In that year it seemed to be impossible to use them in large doses in the treatment of pneumonia. Not more than a gramme of the white oxide of antimony could be given with safety, and kermes mineral produced terrible accidents, in doses no larger than three to five decigrammes. Tartar emetic, however administered and attenuated as to the dose, could not be borne. Subsequently, this mysterious impressionability disappeared, and sixteen grammes of the white oxide of antimony, daily, were frequently given from the first day of the disease, two to three grammes of the kermes mineral, or one gramme of the tartar emetic, without associating with them any substance to mitigate their effect. In this way we can explain the different results which a substance produces, which may vary with the individuals and with the particular moment of life for each individual, without any regard to the dose. So extensive are the considerations upon this subject that opposite results are obtained from what would ordinarily be expected. Bouchut comments upon this fact in the following manner: "Medicinal properties are not, *in fact*, in the medicinal substances themselves, as is commonly supposed. They represent the action of their particular characteristics in conflict with the living nature of each individual. Now, while this nature has general resemblances, it also has marked particular differences; consequently, a medicament, which is always the same in its nature, will frequently meet organisms with different reactions, and will, therefore, furnish different curative reactions. Furthermore, it follows that medicaments do not always have the same results—for example, that which is a tonic for one person may not be for another. On the other hand, a remedy which we consider to be endowed with tonic properties, because by its use strength is increased and the tone of diseased organs improved, may cease to have those effects after a very short time, and may even exercise a debilitating action upon vital activity." ("Nouveaux Éléments de Pathologie générale," p. 124.) Fonsagrives expresses himself quite as positively: "A dose of a given drug may be tolerated to-day, and eight days hence it will not be. The difference doubtless depends upon the different powers of absorption on the two occasions, and the different chemical conditions of the fluids in which the drug is dissolved, but above all upon the varying conditions of the nervous system. . . . And yet how many causes operate to complicate the physiological action of drugs, to attenuate or to increase it, to mask it or even to transform it altogether! The different ages (of life) are not impressed in the same manner by the same drug—its different effect upon the different sexes is also noticeable. The temperament or the *primary* formula of health, the constitution, or its *actual* form, also effect modifications in the action of a drug. Besides, we must take into account the manner of life, the customary food, the habits, etc. I do not mention, in addition to these, conditions of a moral character which play an important part in the production of these infinite modalities, which an analysis, however skillful and delicate it may be, can not include in its *ensemble*." ("Principes de Thérapeutique générale," pp. 35 and 281.) The same author continues: "One child's reaction may be represented by 1, if you give him a drop of laudanum, while another will, under the same circumstances, be represented by 10. Every moment we are meeting with examples of this *apathy* on the one hand, and *erethism* on the other, with respect to every medicinal substance, which demonstrates that the weight of the body is an imperfect basis for establishing any rule of dosage. Impressionability to the action of medicines takes no account of the scales; it rests upon facts of sensibility and life which are eminently idiosyncratic, which are measured in practice only by the results of the substances used, and for which there can be no arithmetical calculation." ("Traité de Thérapeutique appliquée," pp. 527 and 532.) The genuine homœopathists are troubled with this same difficulty, and La Pommerais says: "The question as to doses which will have a medicinal effect can not be established by a general principle, because it is subjected to an infinitude of individual conditions, from the most simple idiosyncrasy, to the best regulated constitution; from the most lively sensibility, the most marked impressionability, to a sensibility the most dull, and sensations the most obtuse. In default of a fixed and invariable rule in respect to doses and the administration of medicaments, which would be an impossibility in view of the variety of sick persons and sicknesses, the duty and the mission of every physician are to appeal to his own inspiration."

The agreement is therefore unanimous. Experience confirms the conclusions which we have propounded, and we can assert that *it is impossible to determine, a priori, the impressionability of a sick person.*

DOSES.

What is a dose? This term is usually accepted in two senses. It may mean the quantity of a medicine taken at once, or the quantity taken in twenty-four hours. To neither of these acceptations must there be rigorous adhesion. For, if it is impossible to fix as a dose the quantity of chloroform which is taken with each inspiration, or the quantity of mercurial ointment which is absorbed by each act of friction, or the exact quantity of a purgative agent in each glass of purgative lemonade, we can not understand, on the other hand, why the accumulated doses should be estimated for each twenty-four hours, rather than for each forty-eight or each twelve hours.

For active remedies the term is usually understood in the first of the two definitions; but the confusion that exists well shows the want of precision and of clear knowledge which is indicated by the term. Notwithstanding this, there is nothing that is more important, for all therapeutics depends upon posology, and without it we should run the risk of going astray into the ethereal regions of the homœopathic myth, or into the dangerous confines of toxicology.

The only definition which can harmonize these two conflicting ideas is one which considers a dose as *the quantity of a medicament which is intended to produce a precise effect.*

Even this definition is somewhat vague, especially if we consider the necessity of expressing it in units of weight and measure. In fact, not only may the end for which the medicament was given fail of achievement, but the effect may not be apparent, for that effect depends essentially upon the dose. There is, therefore, a vicious circle, in which one seeks to determine the effect by the dose, and the dose by the effect, a problem in which the product only serves to indicate to us the factors. This method of considering the dose is, therefore, very arbitrary—in other words, is incompatible with the strictness which its object requires. But, in accepting it provisionally, suppose that one administers a dose of a certain substance in order to produce a certain effect, and that the quantity which is necessary to obtain that result could be calculated in advance, would the effect appear, of necessity; would the result be produced with certainty? Certainly not, even if we admit that the economy would always act in the same manner. As a matter of fact, there can be, and there always is, a considerable difference between the quantity of the medicament which is taken and that which acts at any given moment upon the part to which it is directed. There are, then, differences as to the degree with which medicines are retained, differences as to their solubility: there are those which take place at the time of absorption, and those which occur within the circulation, or while the medicament is *en route*. As to the first, we find that in certain cases of gastric irritability the whole, or nearly the whole, of the dose may be ejected by the act of vomiting. We know also that often, in such diseases as typhus fever or enteritis, the remedy may traverse the entire digestive canal without undergoing the least alteration, as has been recently stated, in a memorable discussion in connection with typhoid fever, before the Academy of Medicine of Paris, and as I have observed in some cases.

The solubility of the dose is a matter of no less inconstancy, and one often finds at autopsies, in the folds of the intestines, large portions of medicinal substances which have failed as to the first condition in order to absorption. (Dr. Crassot, "Encyclopédie Médico-pharmaceutique," 1883, p. 708.) "There is a want of tolerance," says Jaumes, "when a substance which has been taken in a solid form, the form of a pill, becomes so hard that it resists the dissolving action of liquids." ("Traité de Pathologie et de Thérapeutique générale," 1869, p. 1096.) Absorption is eminently a variable condition, and it is only the fact that it is dependent upon life which makes it different from the phenomena of osmosis, and prevents us from counting upon identity as to results. It varies with the condition of the absorbing surfaces, the density of the solution, the state of relative fullness or emptiness of the vessels, the degree of saturation of the secretions, etc.

Finally, the passage of medicaments to their field of operation also varies with circumstances which it is not necessary to mention in detail.

We learn, therefore, that medicaments, being compelled to experience so many vicissitudes before reaching their destination, can never have an effect which is proportional to the dose absorbed. Between the quantity of the dose which is employed and that which is used with advantage there is such a difference, and such a varying one, that, if we consider the dose as the quantity of medicine which is administered, we expose ourselves to the unlooked for, the uncertain, and the erroneous.

Can we foretell with accuracy all the circumstances in nature which will have a bearing upon medicaments, so that we can estimate the loss which is experienced by the dose which is given? Can we in the most simple condition—vomiting, for example—estimate the quantity of the medicament which has been rejected, so as to replace it, and complete the necessary dose? And, if the result need not be mentioned in so simple a condition, what shall we do in the more obscure and complex ones? Nothing, and it would be foolish to attempt anything of the kind. What, then, is a dose, in its most rigorous acceptation? After what has been said, it is plain that it must be simply *that portion of the medicament which acts.*

Now, as the object of administering a remedy is always to obtain a certain result, it may be said that *the therapeutic dose is that portion of a medicament introduced into the blood which is capable of producing a determined action.*

It would be absurd to admit that a result can be produced, whatever be the dose of the substance. Reason and observation show that the result always depends upon the dose. The homœopathists themselves seek a manifest result in their medication, for it is impossible to remove the dynamic influence (*dynamisme*) of matter itself. Says La Pommerais: "The frequency of repetition should always depend upon the intensity of the morbid phenomena; the more rapid the course of a disease, the greater the necessity for repeating the medicament *until a result of a decided character is manifested.*" ("Cours d'Homœopathie.")

One may be deceived in the interpretation of phenomena which are observed, but it is certain that one gives no remedy without hoping for some result from it.

We have seen that every modification produced in the organism by a medicinal agent is called the action of a medicament. Whether this action be latent or visible, mild or violent, useful or harmful, it always exists when an agent enters into relation with a living element. It differs, then, from the effect. The effect is the action of a medicament carried to a certain degree, or intensity, and always giving rise to an apparent modification, whether that be physical, chemical, vital, or—with reference to results—curative. The effect, therefore, depends directly upon the dose. Without stopping to consider the effect in the element alone, we will study it in the organism, and, as the vehicle of the medicament is almost always the blood, and as most medicinal actions are accomplished by a modification of the nervous system, we may, in general terms, offer this principle: the effect depends upon the quantity of the remedy which affects the vitality of one or more nerve-cells, the remedy being transmitted by means of the blood-current. Thus we shall the better understand that, in addition to determining the effective portion of the dose, we ought also to take into consideration that portion of the medicament which is eliminated, and consequently can not affect a second time the cells to which it was carried by the blood before elimination occurred. In reality the dose varies with each systolic movement of the heart, because it depends partly upon the quantity absorbed and partly upon the quantity eliminated. Suppose a single dose to be introduced into the stomach, absorption does not take place all at once; there will therefore be received by the blood a series of doses which will differ at each

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moment as absorption goes on. If elimination is equal to absorption, the dose will be constant; if the former be less active, the quantity of the medicament in the blood will increase as long as any of the substance originally ingested is not absorbed. If, on the contrary, elimination is more active than absorption, the dose of the medicament in the blood will gradually diminish.

If we can not calculate in advance the quantity of the medicament which will be absorbed, no more shall we be able, for similar reasons, to estimate that which is eliminated.

As the active portion of the dose depends directly upon the two factors of absorption and elimination, and as these are absolutely indeterminable, the proposition is justifiable that *it is impossible to calculate the active portion of any dose whatsoever.*

Experience is in accord with this conclusion. We know that at each step practitioners meet with surprises and with unforeseen results from inability to adapt the doses which have been prescribed to the abnormal necessities of the patients. "That which will soothe one patient will excite another; that which overheats may also refresh, just as that which refreshes may overheat. It is in this way that the same drug combines several properties. In support of this statement, let me call to your attention the tartrate of antimony, which is now purgative, now emetic, now diaphoretic, in spite of *posological precautions.*" (Munaret, "Le Médecin des Villes et des Campagnes," 1862, p. 276.)

"Other testimony could be added, but it will suffice to refer to the different idiosyncrasies, which are simply cases in which there is now great impressionability, and again an accumulation of doses; extraordinary cases of tolerance, in which one or two grammes of opium have been given with impunity within a short space of time, or the wine of colchicum by the glassful at once."

(Forget, "De quelques Médicaments actifs administrés à des Doses extraordinaires.")

Such is the extreme uncertainty as to the results which are to be obtained even with moderate doses, and also the variety as to the opinions concerning the properties attributed to medicinal substances. There can, therefore, no longer be any doubt as to the perfect agreement of the teaching which is drawn from facts with the conclusions drawn from the principles which have been enunciated.

We may, therefore, consider that the so-called *maximum* and *minimum* doses have undergone condemnation. The facts which have been cited should long since have convinced physicians by their eloquent obstinacy that the principle of the *maximum* and *minimum* could not be considered the true rule for dosage. Common sense ought long since to have told us that the doses prescribed in the formularies are only based upon experience in certain cases, or upon experimentation made upon animals. From such data, however, the first author who wrote upon the posology of different substances started, and others have simply copied after the first. If any fact went beyond the well-defined limits, it was wont to be explained by the defective quality or method of preparation of the drug, or by an idiosyncrasy so rare that one would not even take the pains to investigate the matter and see if it were really less rare than had been believed.

It has been already remarked that a drop of laudanum may have an effect in one person which might be represented by 1 and in another by 10; it has been observed that an occasional insufficiency of the eliminative organs multiplies the energy of the substances absorbed, that poisoning may take place from *minimum* doses, and no appreciable effect be received from *maximum* ones; but, notwithstanding these facts, we seem to persist in preferring old methods, and in refusing to seek for the true significance of these numerous exceptions. The bad results of this form of practice finally became so manifest that it was no longer possible that a remedy for such a degree of uncertainty should remain undiscovered.

What is that remedy? Nothing could be more simple: it is the old case of the egg of Columbus. If one desires to obtain the effect of a medicament, it must simply be given to *the point when that effect is obtained.* This discovery, which is so simple that it scarcely seemed a discovery, with an importance which is supreme, belongs to Burggraeve. Whether it is the fruit of genius or of common sense will be decided in the future; perhaps it may be due to both.

The entire system of Burggraeve starts from that point. But, in order that the effect may be produced, it is necessary that the desired intensity of the medicative action be not exceeded; it is also necessary that the quantity of the drug in the circulation should not vary, by too much or too little, from the desired quantity. Furthermore, the absorption should be rapid, elimination readily accomplished, and the result promptly obtained. Hence the necessity of using small quantities, perfectly uniform in character, of energetic medicaments, which shall be readily soluble and perfectly tolerated; which, being introduced into the circulation, shall gradually accumulate in the blood until the active dose is reached. Hence the choice of alkaloids and other fixed principles, and of the granular form as a vehicle, in order that the patient may experience the minimum of annoyance in the administration of small and frequent quantities. Clearly *effect*, under these conditions, means a result which is perceived by the patient or appreciable to the physician. Any other result must be illusory.

Apart from this rule, there is only imagination; there is nothing which is positive and mensurable but that which we can see and feel. Fonssagrives, whom we are pleased to quote, on account of his position, his age, his experience, his knowledge, and his critical spirit, qualities which establish his authority beyond conjecture and make him the representative of official science, repudiates the study of those intimate actions which are the most mysterious, for the reason that they are obscure and indeterminable, and advises that we attach importance only to those actions which are manifest or phenomenal, which have a result which can be perceived by the senses. ("Traité de Thérapeutique appliquée," vol. ii, p. 506.)

In ordinary practice doses are frequently measured without accuracy, and repeated without regard to any rule; they often accumulate in the intestine, enter the circulation without our knowledge, or are eliminated without having produced any effect. Everything, in ordinary practice, conduces to such results. The volume of the drug may be considerable, and it may be of a complex character, and not readily soluble. Its absorption, therefore, is often irregular and illusory, while the large size of the dose may readily cause an accumulation in the blood, with serious and perhaps irreparable consequences, if elimination is imperfectly accomplished. This is the reason why many patients are sufferers from the use of substances which are apparently inoffensive, notwithstanding the fact that the most active substances will sometimes traverse the economy without producing the slightest perturbation.

The most harmless substances have sometimes been objected to on the ground that they have a poisonous action. This is certainly true of them in some cases in which the physician has neglected to take into consideration the condition of the eliminative organs. In yet other cases the condition of these organs could not be foretold. The sulphate of soda, the salicylate and the nitrate of potash, which are usually regarded as harmless drugs, may give rise to the most unfortunate surprises. (See Fonssagrives, "Principes de Thérapeutique générale," p. 148; J. Perreira, "Materia Medica and Therapeutics," vol. i, p. 504.) On the other hand, apparently toxic quantities of alkaloids are sometimes absorbed by patients without producing violent effects, in spite of the dread which is felt by those who dare not use them, and who forget that mildness and energy may go hand in hand. This irregularity in the effect of the alkaloids in some cases which are characterized by a very slight impressionability, or by an unusual readiness of the eliminative functions, can only be explained by the method followed in administering them. The stupefaction which is manifested by those who do not practice dosimetry, at the effect of doses which are far superior to those which they have been in the habit of using, is not a new phenomenon.

"It was a singular spectacle," says Jaumes, "for the practitioners who assisted the first dosimetrists, that a patient could endure without detriment and with positive profit considerable quantities of tartrate of antimony, the digestive function remaining almost undisturbed." ("Traité de Pathologie et de Thérapeutique générale," p. 1102.)

The same, or an analogous spectacle, is seen every day, but our adversaries do not seem to profit by the teachings of history. We must not lose sight of the fact that the dose is the quantity of the remedy which is present in the blood at any given moment, and that, for the same impressionability, the effect depends upon that dose.

Let us now see what is meant by accumulation and saturation.

Accumulation may be the result of the total quantity of the doses taken, or of the quantity of the doses which is used with profit by the economy.

Accumulation by means of the doses taken is a result which can not be foreseen; it may happen that several doses, given perhaps at long intervals, are added one to another, and retained in the digestive canal, where they may be absorbed or eliminated, entirely or in part.

If absorption is total and continuous, the effect will exceed the calculations which have been made; if the accumulated doses are rejected entirely, there will be no effect; in yet other cases, the effect will depend upon the proportion between absorption and the activity of elimination. Accumulation from doses which have been efficient results from elimination which is insufficient as compared with absorption. The activity of these two functions, however, is not susceptible of calculation; we must, therefore, always proceed with very small doses, in order that accumulation may never become perilous. The medicament, as it accumulates little by little in the blood, will produce an intensity of action gradually noticeable, which will increase by degrees until the *effect*—that is, the point for which we are striving—is obtained. When this effect has been obtained, it is time to suspend or to diminish the doses; and, as the doses are very small, soluble, and readily absorbable, absorption will cease when the administration of the medicaments is interrupted; likewise accumulation in the blood will be arrested, and the corresponding energetic action of the medicaments. Elimination continuing, the activity of the dose will continue to diminish until the remedy is entirely removed from the organism. It is, therefore, evident that, while in allopathic practice accumulation is an undesirable event, in dosimetry it is an advantage, and an indispensable one, because by it alone can the effect be obtained; and, according as this effect is appreciable and proportionable to the accumulation, shall we be able to excite, increase, or diminish it, as the indications present themselves.

Aside from the accumulation of the doses, we may admit also an accumulation of effects, or medicinal er[illegible] ses in which, the active dose remaining c[illegible] mpressi[illegible] duced is maintained or is exaggerated by a repetition of the impressions caused by the agent. In such a case, also, dosimetry offers perfect security, because the effect is increased only to the necessary limit, since absorption is continually equal to elimination ; and, at the moment when absorption ceases, the elimination continues, and the active dose is diminished in its turn, so the partial effects can no longer be increased. If, on the contrary, absorption exceeds evacuation, the accumulated effects will only produce the total effect more speedily.

Saturation can be understood in only two ways : 1. Either it is the accumulation of the medicament in the blood in such quantity that its accumulation is no longer possible, from which one of two things happens : (*a*) an insufficient effect is produced (for, if it had been sufficient, the doses would not have been repeated until saturation), which will remain stationary, because the active dose can not be increased, absorption being suspended, and then this effect will indicate, *ipso facto*, that new doses would be of no use ; or (*b*) no effect is produced, and, as saturation prevents further absorption of the medicament, we are reminded that we must try some other substance as a synergist. 2. Or saturation exists in the effects produced—that is to say, it is useless to increase the dose—the organism will no longer react to its influence, and the medicinal energy will not reach a degree sufficient to produce the desired effect, still less to produce any phenomenon of an alarming character.

But, though this element has given negative conclusions, some other element will respond to the indications, and we shall thus be warned not to insist upon it. The effect that we seek after has not been produced, it is true, but we are thus warned to be upon our guard.

When this saturation of effects occurs, it may give rise to failure of a dosimetric treatment as well as of an allopathic dose. However, if the desired useful effect is not produced, but some unusual manifestation is apparent in its stead, which method will have shown the less foresight? Will it be dosimetry, which produces an effect little by little with gradually increasing intensity of medicinal action, or the allopathic method, which roughly provokes it with all the force of its powerful doses? If this effect, which could not be foreseen, is an evil, under what condition shall we be able to control it with the greater facility? Will it be when it exists at its maximum from the beginning, or when the evil presents itself slowly, and is aggravated only by our obstinacy and obtuseness? The difference between the two methods is too evident for further comment. The only way, therefore, to proceed with accuracy, with assurance, and without danger, is to give, at short intervals, small doses of simple substances which are readily soluble, and have clear and precise effects. In this way we can correct any possible variability in the given pharmaceutical preparation, uncertainty as to the activity of absorption, ignorance as to the state of elimination, and we can compensate for inconstancy in the vital impressionability. The different conditions may vary as much as they will, but we shall always reach the effect. Can this effect be injurious? We have already seen that it can not, for, in place of following any arbitrary rule, in place of calculating the dose in accordance with the inflexible indications of the formularies, or our own vague inspirations, we allow ourselves to be guided by vitality itself. This element does not tell us how much of the medicament must be given in order to arrive at a precise result, but it does tell us to stop when the end has been attained.

So a fireman, though he may be ignorant as to the quantity of coal which the furnace of his locomotive will burn, does not give himself concern on that account, for he intrusts the regulation of that matter to his infallible manometer. When the desired pressure of steam is indicated, he ceases to apply fuel, conscious that he has used only what was indispensable, whether much or little has been burned. When it is stated that the administration of drugs by the dosimetric method can never produce harmful results, it is, of course, presupposed that the result will be such as would be expected from the attentions of a physician who is skillful and experienced in the use of drugs. If a physician has administered an emetic to the point at which it produces vomiting, and bad results follow the act of vomiting, would it be right to say that the effect of the medicament has been harmful? Assuredly not. The fault has been in the method of interpreting the indications.

A medicament which gives exactly the result which is expected from it, neither more nor less, is a medicament which has been accurately administered. Such results constitute the great merit and the incomparable value of the method of Burggraeve. It is the only one by which the caprices of vitality are subjected to the intelligent will of a physician. And not only is this method exempt from dangers, but it is the only means which allopathic practitioners have for avoiding dangers. It is not difficult to show that, whenever the regular practitioners desire to combine *efficiency* with *innocuity*, the dosimetric method of administration is the one which is employed. Now, as it is impossible to correctly understand therapeutics if these two conditions are separated—in other words, a remedy ought to be always effective, never harmful—one must always turn to dosimetry if one desires to make himself truly useful in his medical attendance. In ordinary practice, when one wishes that a drug should be effective, an attempt is made to render it active by giving it in small and repeated doses until the required effect is attained, and one should not be satisfied with the common method of giving now and then any dose which the inspiration of the moment may suggest. If, for example, the case be to obtain anæsthesia from the use of ether or chloroform, to treat a threatening asystole, to combat the effects of inanition, to calm a violent pain, to dispel a spasm which threatens life—if the question be to excite vomiting, or to produce a diaphoretic or hypnotic effect—do we not have recourse to the use of small doses, which are repeated until the effect is produced? Do not our adversaries recognize that there is danger from the uncertainty of their doses, from their erroneous calculation, in a word, from the absence of dosimetry? Has not Fonssagrives said that "the dangers of mercury are not peculiar to it, but belong to all active medicaments, when they are used without particular indication, without accurate measurement, and without regard for the rules by which they are rendered inoffensive"? ("Traité de Thérapeutique appliquée," vol. ii, p. 190.) Does not Dujardin-Beaumetz say: "Heart tonics, like all other medicaments, present two distinct aspects: if the dose is carefully *measured*, good therapeutic results will follow; if it is excessive, the scene will change, and a toxic effect will appear"? ("Leçons de Clinique thérapeutique," p. 60.)

And, on the other hand, when the regular practitioners do not dare to meet the dangers which they believe are found in the dosimetric system, is it generally known what plan they follow? Let us see what they say upon this point: According to Fonssagrives, "the most active alkaloids—digitaline, veratrine, strychnine, even aconitine, the salts of arsenic, etc.—may be used as well for the treatment of children as for adults, and any therapeutist who would deprive himself of their usefulness would be deficient in good judgment. *Everything depends upon the doses, which should be very small at the beginning, and gradually increased, according to the effects observed, so they will yield all the desirable probabilities associated with innocuity.*

"Every medicament, however great its activity, is applicable to practice among children, not excepting those medicaments to the action of which children show the greatest susceptibility; opium and tartrate of antimony, for example, need not be absolutely excluded from such practice. Everything depends upon the appropriate indication and *graduation of the doses.*

"The principle of administering the antispasmodics in *minute doses* clears away all difficulty, and enables us to obtain satisfactory results.

"Finally, having taken the precaution of beginning with the smallest dose (of strychnine), of watching its effects, and of increasing or diminishing the *fractional* doses, as circumstances demand, we can feel secure from all risk of accidents." ("Traité de Thérapeutique appliquée," 1882, pp. 527, 572, 577.)

The great dangers of dosimetry, therefore, are reduced to this: these are the great crimes of which it is accused; these are the reasons which prevent our adversaries from adopting our method. This is the retort which we give to the accusation against the system, viz., dosimetry is effective without ceasing to be inoffensive; it is inoffensive without ceasing to be effective.

We are therefore warranted in offering the following conclusions:

1. Therapeutics always aims at a result.

2. The result can only be obtained by a dose which shall be *sufficient.*

3. The *sufficient dose* can not be established in advance either by calculation, by experience, or by inspiration; we must give the remedy until the *sufficient result* is obtained, without especial regard to the quantity taken, but only to the objective and subjective modifications which an examination of the patient will indicate. Experience and calculation can only aid us in establishing the initial or *typical* dose, the fractional part of a complete dose which should serve to initiate the medicative action, and which, when repeated with suitable frequency, will constitute the sufficient accumulated dose. The initial dose should never be capable of producing any toxic effect, for, if it did, we would

fall into the dangers of the allopathic practitioners, and thus the dosimetric system would lose the characteristics which give to it all its value and all safety.

CURATIVE ACTION.

Since living matter can be modified in its *dynamism*, and in its material constitution, and since substances which are foreign to the organization may be the agents of this modification, it is easy to understand that the mechanism by which morbid phenomena are produced is the same as that by which the action of medicaments is realized. Both the former and the latter are the resultant of physico-chemical movements struggling with the vital motion. There is no difference between the modifications which are produced upon the body in its normal condition by morbific agents, and those which are effected in the pathological condition by therapeutic agents, if we consider them in their essence. If there are any differences at all, they arise entirely from a diversity of causes—a diversity which may result from their particular quality, their degree of intensity, the duration of their action, or the time at which they are produced.

Pathology has chapters in common with pharmacology and therapeutics. Saturnism, hydrargyrism, narcotism, ergotism, or accidents from lightning, are morbid conditions which are distinguished from ordinary medication with lead, mercury, opium, ergot, or electricity, only by the degree of intensity or the duration of the action of the agent which produces modification of the vital phenomena.

The laws which govern the two classes of phenomena are common and identical; the results differ with the differences in the conditions, which it is impossible not to take into consideration in our calculations.

It should not be a matter of surprise that hygiene and therapeutics—the two sciences which teach us as to the means which will have a favorable effect upon the organism in health and the organism in disease—should really exist as sciences. Indeed, their existence could only be denied by minds which are systematically preoccupied in wrong directions, or are totally devoid of every faculty of observation.

But, after having shown that intervention by therapeutic means is possible, it remains for us to determine the conditions which shall render them useful and effective. It has already been stated in general terms how curative action by means of medicaments is accomplished ; but, if we were to descend to particulars, and to the particular reaction of each medicament and each morbid element, the problem would become insoluble, because we are entirely ignorant of the exact means for determining phenomena which change the condition of health ; neither do we know the cause of the differences which exist in the force which is exercised by certain substances, among which substances we must include medicative agents. The results from the intimate action of a remedy can scarcely be ascertained by analysis. Only a comparison of these results of the most simple action of remedies with the most simple vital perturbations enable us to conclude that the curative action is exercised in opposition to primary or secondary results. The old principle, *contraria contrariis curantur*, is still the one which explains the greater number, if not all cases. Not that it was a difficult matter to explain them by the contrary principle, *similia similibus curantur*, for, as we have already seen, the principle of vital equiponderations teaches us that a divergence in one sense is always balanced by a divergence in a contrary sense. If there be a congestion in one organ which is caused by vascular tension in a neighboring organ, if spasm is always accompanied by a compensatory paralysis, if, in a word, life retains its equilibrium only by means of antagonisms which are admirably adjusted, any displacement whatsoever of force or of matter must necessarily result in a want of equilibrium of antagonistic forces, which can neither be limited nor prevented. But the formula of the homœopaths fails to satisfy according as physiology opens to us new horizons and explains pathological phenomena. Between the old idea concerning inflammation and that which follows from the results of physiological analysis—which attributes the primary cause of the phlogosis to vaso-motor paralysis—there is so much difference that the scientific basis of the reform which was instituted by Hahnemann seems likely to fall, and in its fall it must include the entire system which was constructed by the founder of the homœopathic doctrine. But, instead of dwelling upon these subtilties, it will be more profitable for us to inquire exclusively as to the indications which an examination of a sick person presents to us, in order that we may relieve the urgent necessities of the organism which has been invaded. In many cases the analysis of a diseased element will enable us to judge as to the proper antagonistic modifications which we should at once employ in order to restore readily and quickly the equilibrium. For example, in a case of dysuria, we will find spasm of the neck of the bladder, associated with paralysis of the body. The indication will, therefore, be to administer an anti-spasmodic—hyosciamine, for example—in order to overcome the spasm; at the same time we should use a nerve-stimulant—for example, strychnine—in order to overcome the paralysis, and give to the longitudinal muscular fibers the tonicity in which they are deficient, either because it is concentrated in the sphincter or has been wasted in repeated contractions. In accomplishing this end, should we follow the principle *contraria contrariis*, or the opposite one, *similia similibus?*

Apparently both; but our treatment, though it could appear to be contradictory, is, in reality, physiological, for we seek to overcome the want of equilibrium, and to antagonize merely the aberrations of the physiological mode. Therefore, whenever we are able to discover the primary, elementary morbid change, our efforts to produce a cure must follow the principle *contraria contrariis*. This is the clearest, most natural, the most simple, and the most logical method. We readily admit that the disease will disappear only after another disease has been artificially produced. While we admit that all medicative action is only a modification of the organo-dynamic condition, and that diseases are only the different modalities of matter animated by vital dynamism, we find that every cure is the result of a morbific action, which is more or less intense and more or less fleeting. But it is by no means necessary that this artificial disease should correspond to the original one either by intensity or by nature; indeed, in most cases, the cure can only be explained by the opposition between the modifications effected by the remedy, and those which were caused by the disease.

The cures which are accomplished by means of the attenuated and infinitesimal doses of homœopathy, and which are attributed by many to medicative force, naturally lead to the consideration of the worth of this force as a curative agent. If this force exists, its effects should be most clear and manifest in the simplest cases —that is, in those which would tend to recovery without the intervention of therapeutic means.

Suppose we take a very simple case of congestion; what has occurred? Blood has accumulated in a vessel, its pressure has increased, its walls have been distended and made thin, and, should the pressure gradually continue, the elasticity of the vessel will be overcome, its force of cohesion will be vitiated, its walls will be torn, and the result will be a hæmorrhage of greater or less volume. As the blood is discharged, the pressure is relieved, the walls come together again, the congestion disappears, the blood is coagulated at the point of rupture, and the hæmorrhage ceases, or, on the other hand, it continues to flow, and the use of a hæmostatic becomes necessary. Do we not see in this process a series of successive modifications in perfect relation, and dependent, each upon the other? And is it not thus that morbid phenomena are evolved when the disease gets more severe and the supposed medicative force is ineffective? Is there any cause for the supposed intervention of any special force differing from the forces which result from physical, chemical, and vital movements, in order to explain the cessation of the congestion? But, if the walls of the vessel in the supposed case of congestion do not yield to the excess of pressure, how can the medicative force interfere so as to overcome the cohesion of the walls of the vessels? Moreover, if it overcomes this cohesion, it must, in destroying one disease, give rise to another, which will be longer in duration and more severe; and, should hæmorrhage take place in a very sensitive area —in the brain, for example—death itself might be caused by the use of the agent which had developed a great or even fatal lesion out of a slight perturbation of the physical forces.

In order that a force be medicative, it should act suitably upon associated morbid phenomena with due and clear reference to their cause; it should foresee and calculate the consequences as well as the opportunity of its intervention; it should act with suitable intensity upon succeeding phases of the disease for the cure of which it is given; and it should seem to exercise a kind of selection as to the means and the place of its application. A force of this character should, of necessity, be intelligent, omniscient, and omnipotent—in a word, it should be divine. But, if it has these qualities, it should also know how to vary the method of treatment, as a hæmorrhage of the brain is not a hæmorrhage of the intestines or of the lungs. But observation teaches us that there is no intelligence of any character which presides over natural crises; that the force which is at work is blind, inconsiderate, and absurd; and that its action may be limited to insignificant cases, or that it may aggravate cases of the greatest gravity; we may, therefore, conclude that this force has no real existence, and that it is folly to rely upon it for the amelioration of any disease whatsoever. The notion of a medicative force (*vis medicatrix naturæ*) has originated from numerous instances in which cure has resulted either without the aid of a physician or even in spite of unsuitable interference on his part. This is not sufficient to establish our belief in the existence of any force which could be of advantage to the sick. As well might we say that there is a medicative force in time, for we see the sun succeed the storm; or that there is a force in the earth which preserves it, since the convulsions of the globe do not last; and volcanoes become quiet after a period of effervescence, and after they have vomited up their incandescent lava.

The medicative force is therefore a myth—an expression which has no meaning, further than that a great many cases of disease get well spontaneously. The getting well is not effected by means of a particular force; it is the result of a transformation of effects, in a curative sense, which is caused by the condition of the organs involved, by the external medium, by alimentation, or by the state of the functions which have remained unaffected, or the trouble of which tends naturally to diminish by itself.

It is only by reasoning in this way that we can understand how a disease which is benignant at its outset suddenly becomes dangerous under the influence of some agent or other, which prevents an evolution in the direction of health, in spite of the illusion of a medicative force. Therefore, since this force has no real existence, while the force of medicative agents does exist, therapeutic intervention becomes an indispensable obligation, which is laid upon the physician from the time when the first abnormal phenomenon appears until the patient has ceased to live.

SYSTEMATIC THERAPEUTICS.

The treatment of a disease is a warfare, a campaign in which the physician studies to find out the strength and the tactics of his enemy, the theatre of his operations, and the troops at his disposal, before he elaborates a plan for his own offensive and defensive conduct. As soon as he has joined battle, he should not only think of victory, but should seek to cut off the retreat of the vanquished, follow up fugitives, repress disorder, clear away that which has been destroyed, establish peace and harmony, arouse prosperity anew, and restore that which has been devastated by war.

Disease is a very complicated *ensemble* of phenomena, which follow each other without interruption, from the moment when the cause begins to act, until its last effects are terminated either by a return to health or by death. Therapeutics constitutes an arsenal of arms of various kinds, each one of which may be handled in a thousand different ways. Between the moment when we find ourselves in the presence of a sick person, and that in which we are required to draw up a plan of treatment, a period of time, usually very short, will elapse, in which this plan must be outlined.

It is, therefore, desirable that we have some method which will abbreviate our work as much as possible, and habituate us to the detachment of the leading indications and the choice of the best agents, and which will enable us, in a word, to trace the general lines of a therapeutic system.

The classification of diseases has an advantage: it is, that the presence of certain symptoms leads us to anticipate others, and that their order of succession reveals to us the existence of latent perturbations, as well as the nature of the causes which have aroused them.

A particular diagnosis in the various cases of disease is a necessity, but, without being limited to the determination of the locality of the principal morbid condition, we should also not neglect the ascertaining of the nature of the primordial perturbations and their original causes. This point is the more important, because, if we can settle it in the dynamic or preparatory phases of diseases, and then know how to interfere effectively, we can cut short the subsequent phases. In variola, for example, we can not diagnosticate that the disease is localized at any one point; we merely observe fever and other uncertain and temporary symptoms. But, if we are able to recognize the nature of the disease and its main cause by destroying the latter, we can arrest the natural evolution of the morbid processes, and reduce the duration of the disease to a very few days; while, if left to take its course, it would reach its end only after the patient had suffered for a long time, and had lost much strength.

If we are called to investigate any morbid condition whatsoever, our first thought should be to discover the cause of disease. That cause, when discovered, will either be still in existence or will have passed away. If it still exists, we must fight it with the greatest energy, in order to destroy it, to neutralize it, or to prevent its results. If the original cause has disappeared, we can no longer operate upon it, but we can and should direct our efforts upon its results. These results may be primary, secondary, tertiary, etc., and it will be our duty to fight them in the order in which they were developed, choosing for particular attention, among those which appeared at the same period, the ones which are the most grave, the most perturbant, and the most insupportable.

The medicaments which are directed toward the principal element, which is the origin of all the other morbid elements, constitute what is called the *dominant*, whether that element be a pathogenic cause or only the cause of a group of secondary symptoms. When these primary perturbations are cured, it sometimes happens that some of their effects remain. The *dominant* will vary, in that case, according as different morbid elements preponderate. The symptoms which have arisen from a principal morbid element, which can not disappear rapidly, may give rise to suffering, and act unfavorably upon the course of the disease by giving rise to new series of symptoms, or by perverting the action of the medicaments, or by increasing the primary want of equilibrium.

These symptoms must be antagonized, whatever be their hierarchical position. Remedies which are occupied with this function constitute what is called the *variant*. Therapeutics has only diseases to fight, and, as diseases are always accompanied by changes in the vital phenomena, we can not introduce into therapeutics, nor call by the name of medicaments, the neutralizing chemical bodies which are intended to prevent the sad results which attend the action of poisonous substances. Before the absorption of the poison, or before its action upon the surface of the organs, no vital modification is possible, no disease has been produced. The antidote acts as it would act in a beaker in the laboratory; its effects are purely physical or chemical, and, indeed, there is no medicative action without the intervention of vitality. It is only after the poison has acted upon the tissues or the functions that disease actually exists, and therapeutics can interfere. The confusion between chemistry and therapeutics originated in the classical languages, and has been retained by pious tradition. The intervention which follows the ingestion of a poison, and which is certainly indispensable to prevent the results which would otherwise follow, certainly belongs to the domain of medicine, but it belongs rather to the department of hygiene than to therapeutics. The latter is limited in its function to curing; it neither encroaches upon physics nor upon chemistry, excepting in those cases in which it is preventive. It is self-evident, however, that a physician can not fail to be interested in the action of antidotes, in order that he may ward off the action of poisons upon the organism in every way. What has been said about antidotes is equally true about certain medications which have for their sole object the modification of fermentations, the absorption of gases, and the elimination of foreign bodies. It is indispensable that the causes of disease disappear if we are to effect a cure; but true curative therapeutics is concerned with the results of causes, and not with the causes themselves. That is why the physician must bring to bear precise and rapid agents for the destruction or the elimination of the cause. He will choose these means from chemical and physical agents, parasiticides, and eliminators, limiting his action to the nature of the cause, to the means at his control, and to the tolerance of his patients, whose organism should remain at least neutral upon its own territory in this struggle, which is carried on in its behalf.

It is only after one has been attacked and injured that he has a right to demand the services of a physician, who will come to his aid, and will serve, as he ought, as an ally of Nature. When the organism passes from the defensive to the offensive, with its consequences, the time has arrived for putting the therapeutic system into operation.

This system will have for its objective point the prevention of the prolongation and multiplication of the existing troubles which engender others. We shall be able to control the latter the more easily by strangling the rebellion in its incipient state as rapidly as possible. The jugulation of diseases is one of the most important duties which are imposed upon the physician. In order to accomplish it he must lose no time, but begin the struggle forthwith. In the dynamic stage of diseases, jugulation (cutting off, as by strangling) is relatively easy; in the preparatory stage there is more difficulty, and it is sometimes insurmountable when the disease is completely under way. In that period we may be able to prevent the progressive evolution of the disease, but it will be impossible for us to repair, in a few hours, the injuries of substance which have been effected; for, while it is possible to correct in an instant disturbances of motion, modifications of substance always require time for their accomplishment. According as the nature of an injury is dynamic or material shall we conclude as to the activity of the medication which is required. The rule is as follows: For every acute disease, acute treatment; for every chronic disease, chronic treatment. But, in order to establish this acuity or this chronicity, it is not the progress of the disease in its *ensemble* which must be considered, but rather the rapidity with which the morbid elements are established which are to be antagonized. An hysterical paralysis may be chronic; it may have lasted several months or even years, and yet require acute treatment, because, as it was established quickly, it may also disappear quickly, perhaps in a moment, or even from the influence of a moral impression. But, if this is to be accomplished, there must be no appreciable modifications of tissue, for the cure of such conditions is a matter of nutrition, and all the means at our disposal for the modification of nutrition are feeble, slow in their action, and not precise. In a word, the plan of treatment should be more acute, as the morbid element which it aims to correct is more essentially dynamic; and the more chronic, as the dynamic perturbations have been transformed into lesions of substance. The best rule will be to investigate the nature of the principal morbid elements and their filiation or succession in the primary perturbations. For example, paralysis which results from cerebral hæmorrhage always comes on suddenly, without presenting any indication for the acute plan of treatment for paralysis.

This element is, in effect, already secondary; the indication is to combat the primordial dynamic lesion—that is to say, the vascular atony—which has allowed the hæmorrhage to take place. It will also be necessary to administer ergotine in the most acute manner possible, because this medicament, by increasing the contractibility, causes the hæmorrhage to cease, and prevents its recurrence. The necessity for acute medication being granted, it still remains to estimate its degree of acuity. In this respect we should be governed by circumstances. We aim at obtaining as rapid an effect as possible, in so far as therapeutic action can be accomplished without harm to the patient. Herein lies the question of dosage and of graduated effects, upon which it is useless to insist. The dose is determined, in general, by the quantity of the medicament which is contained in each granule—a quantity which may serve for the average in most cases. However, the most active alkaloids—like strychnine, morphine, hyosciamine, atropine, daturine, colchicine, etc.—should be given in fractions of granules when the administration of the first granule gives evidence of an excessive impressionability on the part of the patient, or when his age leads one to fear intolerance of the medicament after the first few doses have been given.

It is often necessary, however, to double or treble the fractions of doses in order to produce an effect; that is, to give two, three, or even more granules at once when we wish to lengthen the intervals, to bring on the effects more rapidly, to overcome some apathy to the action of drugs, or any morbid resistance of an exceptional character. In the chronic diseases, which call for a plan of chronic treatment, we can proceed in two ways: we can either give the same dose on each occasion, increasing it at long intervals, and relying upon time and the persistence of slight effects to obtain the desired result, or we can increase the quantity of the drug at each dose until a perceptible effect is obtained.

Suppose we take for an example an atonic condition of the stomach, for which strychnine is indicated. We will administer one or two granules before each meal for a long time. In some cases no effect will appear, the dose being insufficient; in others, these small doses will go on accumulating until their useful effect is apparent, and then the effects of the drug will remain concealed, while the curative effects will be the only ones which are evident.

But, in place of administering this constant dose of strychnine, we may give one granule on the first day, two on the second, then three, four, five, six, or more at a time, until the curative effect is obtained, or an important physiological one.

This latter method of administration is especially fitting in the chronic organo-dynamic diseases; the former in those chronic diseases in which the organic lesions constitute almost entirely the disease, while the dynamic troubles are of very little account.

The variability of individual impressionability, which may change from one day to another, renders the latter method of administration the less safe, and limits its use to those cases in which the indications are very clear, and in which medication is addressed to a morbid element of great genealogical importance. This plan of treatment can not be continued for a very long time, but, as the doses are increased very gradually, the dangers of a result which was not anticipated are not great.

After the effect has been obtained, we should continue the use of the same agent, but in gradually decreasing doses. It should be understood that dosimetry, the principle of which is that there is no sufficient effect without a sufficient dose, supplies all the means for testing the impressionability, so as to be able to accomplish much with safety in a small period of time. When the disease reaches its stage of reparation, the physician must still interfere, but rather to furnish that which the organism lacks than to modify it. It is a kind of expectation of a protective character, which, while allowing Nature to pursue her course, and transform morbid results into healthful processes, furnishes her in an intelligent manner with a liberal supply of the substances which are necessary for organic repair, such as iron, arsenic, phosphorus, and lime, which are complementary to alimentation, and, by means of the dynamophores (caffeine, guaranine, brucine, strychnine), increases the sum of vital energy, which is necessary for the complete repair of the tissues and forces. What we are about to say in our "Elements of Clinical Therapeutics," and what has been already expressed in other works on dosimetric medicine, will give the physician the instruction and the confidence which he requires to treat the different varieties of disease. The pharmacological memorial and the list of the principal morbid elements, and the most useful medicaments which are appropriate for them, will greatly facilitate the arduous task of elaborating a therapeutical system which shall answer the principal necessities of the sick.

PHARMACOLOGICAL MEMORIAL

OF THE DRUGS WHICH ARE IN USE IN DOSIMETRIC MEDICINE,

WITH A STATEMENT AS TO
THEIR DOSES, THEIR PRINCIPAL PROPERTIES,
AND THEIR MODE OF USE.

PHARMACOLOGICAL MEMORIAL.

Acid, Arsenious.—In granules of one milligramme each. This drug acts as a restorer of the nutrition, and has a great influence upon the blood- and heat-producing functions. It is indicated in chloro-anæmia, leucorrhœa, the ataxo-adynamic fevers, cholera, purulent cachexias, in certain cutaneous affections, such as elephantiasis, psoriasis, icthyosis, etc. It is a febrifuge, and may be used as a succedaneum or an auxiliary to quinine in the treatment of malarial fever. In acute conditions, one granule every half-hour or hour may be given, according to the intensity of the disease, until an effect is produced; in chronic conditions, from ten to twenty daily may be used.

Acid, Benzoic.—In granules of one milligramme each. This is the immediate principle which is found in all the balsams. When introduced into the organism, it transforms uric into hippuric acid, which, when combined with the ordinary bases of organic fluids, forms soluble salts. It is indicated in gravel, gout, etc. It also has stimulating properties, and favors expectoration; but, as it is only slightly soluble, it is better to administer it in the form of salts—for example, benzoate of ammonia, soda, or lithia.

It is often used in the subacute and chronic forms of bronchitis among children, and is also suitable for cases of laryngeal catarrh with hoarseness. Dose, two granules every hour, or three granules three or four times a day.

Acid, Phosphoric.—In granules of one milligramme. It is an hæmogenic excitant, which is used, with strychnine, in the first period of inflammations, in all algid affections, and in depraved conditions of the nervous system. Phosphoric acid has been used successfully in the scrofulous disorders of children. Dose, eight to twenty granules a day.

Acid, Salicylic.—In granules containing one centigramme. It is antiputrescent, antiseptic, and antifebrile. It is indicated in all zymotic diseases, especially in diphtheria, malaria, eruptive fevers, etc. It is also appropriate in different forms of dyspepsia, especially those in which there are fetid eructations. Dose, one to three granules at a time, at shorter or longer intervals, according to the case. It is also useful as a topical application in all forms of epithelial degenerations.

Acid, Tannic (*Tannin*).—In granules containing one centigramme. Indicated, on account of its astringent properties, in all conditions in which there is marked relaxation of the tissues. It is useful for hæmorrhage, and for discharges of a mucous character, for the atonic diarrhœas of children, and as a topical application (chewing the granules) for chronic forms of gingivitis, amygdalitis, and pharyngitis, or, dissolved in water, for subacute forms of conjunctivitis. Dose, two or three granules three to five times daily. It should never be given with the alkaloids, nor with the greater number of the metallic salts, since it forms insoluble compounds with them.

Aconitine.—In granules of one half of a milligramme. This is a valuable anti-congestive, and the best of the antiphlogistics. It is indicated for all febrile and inflammatory conditions to moderate the fever and reduce vascular tension. It is useful in all gastro-intestinal irritations, and in those of the respiratory apparatus. It possesses decided cholagogic properties, and is a diuretic and sudorific. It should be associated with digitaline and veratrine in intense febrile conditions, and with strychnine when there is a depressed condition of vitality.

Dose, in the acute state, one granule every fifteen minutes or every half-hour, or larger doses may be given if the case demands it. In the chronic condition two granules may be given three or four times a day. The thermometer should always serve as a guide in the use of aconitine.

Agaricine.—The active principle of *agaric.* The granules contain one milligramme each. It is an excellent active succedaneum with atropine in the treatment of nocturnal sweating.

The dose is three to six granules daily.

Anemonine.—The volatile, crystallizable principle which is obtained from the *anemone pulsatilla.* Each granule contains one milligramme. This alkaloid is a decided irritant, and has a physiological action analogous to that of aconitine, but with this difference—that it stimulates the nervous centers. It may be used in paralysis, whooping-cough, and constipation. It is a medicament which is not very well known, but is capable of giving excellent results. The dose is two granules three to five times daily.

Apomorphine.—In granules of one milligramme. It is a useful expectorant in cases of bronchitis and pneumonia in children. It is a tonic to the respiratory apparatus, and for this reason is indicated in capillary bronchitis in connection with brucine. When used hypodermatically in doses of one centigramme, it acts as an emetic. The dose is one to two granules every hour, or more may be given if necessary.

Arbutine.—A glucoside, in granules containing one milligramme, which is obtained from the *arbutus.* It is to be given in doses of two to three granules, three or five times daily, in chronic affections of the bladder and urethra. It is also given to increase the flow of urine.

In rebellious cases of bronchitis in lymphatic individuals, arbutine is also indicated.

Arseniate of Antimony.—In granules of one milligramme. It modifies the vitality and the nutrition of the organs which are innervated by the pneumogastric nerve. Used as an expectorant, it has the disadvantage of diminishing the appetite.

The dose is one to two granules every two hours. It is also used to modify disordered conditions of the heart, in doses of one to six granules daily.

Arseniate of Caffeine.—In granules of one milligramme. It is indicated in the condition of cerebral torpor which attends infectious diseases, and in cases in which the energy of the heart is weakened. In periodical cephalalgia and hepatic congestions of malarial origin, its prolonged use is beneficial. Two granules may be given every two hours.

Arseniate of Iron. — In granules of one milligramme. It is the best regenerator of the blood in chloro-anæmia, in conditions of convalescence, and in hæmophilia. It is also useful in the dermatoses of lymphatic persons, and in leucorrhœa. Dose, six to twelve granules daily.

Arseniate of Manganese.—In granules of one milligramme. It is used in the same doses and for the same purposes as the similar salt of iron, when the latter can not be tolerated.

Arseniate of Potash.—In granules of one milligramme. Dose, six to ten granules daily. To be used for various affections of the skin, digestive disorders, and liver troubles.

Arseniate of Quinine.—In granules containing one milligramme each. It is used in doses of six to twenty granules daily to counteract the element of periodicity which is present as a complication in certain diseases. It is also useful in affections of the skin which have evening exacerbations, and for lesions of the liver and spleen which are the result of malarial poisoning.

Arseniate of Soda.—In granules of one milligramme each. An agent which modifies the nutrition in general, and that of epithelial tissues in particular. It is useful in diseases of an herpetic character, and in all the chronic engorgements. When associated with iodoform, it modifies the work of suppuration. Dose, six to twelve granules daily.

Arseniate of Strychnine.—In granules containing one half a milligramme each. This is the neurosthenic *par excellence*, and the best vital incitant. It may be used with profit in almost all diseases, but especially in those which are accompanied with paralysis or atony. It should be administered in the initial stage of all pyrexias, to antagonize vaso-motor paralysis, and should be associated with phosphoric acid. In cases in which defervescents are badly tolerated, a combination of them with strychnine will enable us to use them until their effect is produced. In the spasmodic affections, it assists in establishing the physiological equilibrium by combating the paralysis, while hyosciamine attacks the spasm.

It is a tonic for all the apparatuses and for all the functions, and one of the principal means for producing longevity.

Dose, one to two granules, at intervals which must be governed by the acuteness of the disease and the degree of diminution of the vitality.

Asparagine.—In granules containing one milligramme each. It is the active principle of asparagus. It has a feeble diuretic action, and is calmative to the urinary passages. It is useful in the first stage of urethritis and cystitis. Dose, ten to twenty granules, repeated several times.

Atropine.—In granules containing one half a milligramme each. An alkaloid which is obtained from belladonna. Its principal action consists in contractility and in diminishing secretions. It may be employed in all conditions of spasm, and for that reason it is useful in tetanus, hydrophobia, photophobia, internal strangulations, gastralgia, and the neuroses, such as hysteria, chorea, and epilepsy. It is also given to facilitate parturition, because it dilates the neck of the womb and regulates its contractions. It is useful for ptyalism, nocturnal sweating, and incontinence of urine. Dose, one granule every half-hour, in very acute cases; in others, one granule every hour, every two hours, or less frequently, according to the condition of the disease or the tolerance of the patient. Atropine is borne by children better, relatively speaking, than by adults.

Benzoate of Ammonia.—In granules of one centigramme each. It is a mild stimulant to the catarrhal, urinary, and sudoral secretions. It is very useful in apyretic forms of bronchitis in children, to facilitate and then to diminish expectoration; also, in atonic forms of cystitis. Dose, ten to twenty granules daily.

Benzoate of Lithine.—In granules containing one centigramme. It is indicated in all the lithiases and gouty troubles, and also in affections of the urinary passages. Likewise is it useful in pyrosis, and dyspepsia from excessive secretion of acid. Dose, ten to twenty granules daily.

Benzoate of Soda.—In granules containing one centigramme. Its indications and doses are the same as those of the two preceding salts.

Biniodide of Mercury.—In granules containing one milligramme. It is to be used in the same cases in which the protoiodide of mercury is indicated, for all the phenomena which are connected with the syphilitic diathesis. Dose, three to twelve granules daily.

Brucine.—A very bitter alkaloid obtained from nux vomica and false angostura. Each granule contains one half a milligramme. It has properties analogous to those of strychnine, but without the intensity of the latter. It is usually substituted for strychnine in the treatment of disease in children, and is useful and almost indispensable in capillary bronchitis, in paralysis, and in atonic forms of dyspepsia. It has also been used in rachitis, and, in general, in all the affections in which the vitality is lowered or threatened. Dose, one to two granules every half-hour, in acute cases; six to twenty granules a day in chronic cases.

Bryonine.—In granules containing one milligramme. It is regarded as a tonic to the large intestine and the respiratory apparatus. It is useful in typhoid fever, in pneumo-typhus, in constipation, and in recto-vesical paralyses. Dose, one to two granules every two hours, in the acute stage; six to ten daily in the chronic stage.

Caffeine.—An alkaloid, which is one of the dynamophores, and is derived from coffee. The granules contain one milligramme each. It excites the cerebral functions and dissipates congestive and comatose conditions. It is a heart tonic, and, as a result of such action, increases diuresis. It is useful in the various forms of neuralgia, in vertigo, and in asystolia. Dose, in the acute conditions, one or two granules every half-hour; in the chronic, six to twenty daily.

Calomel (*Protochloride of Mercury*).—In granules containing one milligramme each. It is generally given as a vermifuge, six to twenty granules being given at once. It is also used as a cholagogue, and with advantage in icterus, dysentery, etc. Dose, one to two granules every hour.

Carbonate of Lithia.—In granules containing one centigramme. It dissolves uric acid, and is therefore useful in all forms of lithiasis. Dose, from six to twenty granules daily.

Cicutine.—In granules containing one half a milligramme. It is a calmative to sensory and motor derangements, and a moderator of reflex excitability. It is indicated in the diseases of the cord, in many forms of neuralgia, in conditions in which there are lancinating pains, in insomnia and in neuropathic excitement.

Dose, in acute cases, one granule every half-hour, until the effect is produced; in chronic cases, six to ten granules daily.

Citrate of Caffeine.—In granules containing one milligramme. It is weaker than caffeine, and is applicable for the same conditions.

Cocaine.—In granules containing one half a milligramme. This alkaloid is a dynamophore obtained from *Erythroxylon coca.* It devascularizes and anæsthetizes those tissues with which it is brought in contact. It relieves congestion of the brain, and preserves the nutritive forces. It is very useful when dissolved upon the tongue in relieving inflammations of the mouth, tonsils, and pharynx. For these conditions it should be given in doses of from two to three granules every hour or every two or three hours. In gastralgia, œsophagismus, etc., one or two granules may be given every quarter of an hour until the desired effect is obtained.

Codeine.—In granules containing one milligramme. As a calmative it is weaker but safer than morphine. It is used at the beginning of cases of bronchitis, laryngitis, and tracheitis, combined with iodoform. It may also be given in enteritis, enteralgia, in dentition, etc. Dose, one to three granules every quarter of an hour, or less frequently if necessary.

Colchicine.—In granules containing one half a milligramme. It is diuretic, analgesic, and cholagogue. It has emetic or purgative properties which never fail, if its use is sufficiently prolonged. It is the drug *par excellence* for the treatment of rheumatism and gout. Dose, one or two granules every half-hour, in acute cases, until the physiological effect has been produced; six to ten granules daily in chronic cases.

Colocynthine.—In granules containing one half a milligramme. It is tonic and stimulant to gastro-intestinal contractility. It is useful in cases of atonic dyspepsia, in intestinal torpor, and in habitual constipation. It is also useful as a vermifuge. Dose, three to five granules two to three times daily.

Cotoine.—A principle which is obtained from the bark of *coto*, a plant which is a native of Bolivia. The granules contain one milligramme. This alkaloid has antifermentative and antipyretic qualities. It is probably analogous to guaranine, and gives excellent results in different affections of the digestive apparatus. It can be tried to relieve vomiting, dysentery, loss of appetite, etc. Dose, three granules three to five times daily.

Croton Chloral.—In granules containing one centigramme. It soothes hyperæsthesia and reflex excitability. It is indicated in myelitis, nervous cough, neuralgia, etc. Dose, two granules every half-hour until the effect is obtained.

Cubebine.—In granules containing one milligramme. It is eliminated by the mucous membranes, and is therefore useful in cystitis, blennorrhagia, bronchitis, etc. Owing to its stimulant properties, it is also applicable in anorexia and apyretic conditions of gastric disorders. The dose is three to five granules three to ten times daily.

Cyanide of Zinc.—In granules containing one milligramme. This salt soothes and settles disturbed conditions of the nervous system. It is useful in gastralgia, epilepsy, etc. It is also advised for affections of a rheumatic character. Dose, six to twelve granules daily.

Cyclamine.—In granules containing one milligramme. It is laxative and cholagogue, but its exact properties and indications are not yet well defined. The dose is six to ten granules daily.

Daturine.—In granules containing one half a milligramme. Its action is calmative and antispasmodic, analogous to but more energetic than atropine and hyoscyamine. It is sometimes substituted in ophthalmic practice for atropine, being used in solution by instillation. It is of service in photophobia and ocular neuralgia, in asthma, uterine colic, etc. [Dose not stated.—TRANS.]

Diastase.—In granules containing one centigramme. It serves to replace ptyaline in buccal and intestinal forms of dyspepsia. The dose is one to five granules with each meal.

Digitaline.—In granules containing one milligramme. This alkaloid has a particular action upon the heart, increasing its contractility by a moderating and regulating influence, and producing a tonic effect. It diminishes the number of pulsations when they are exaggerated, increases the number when the systole is incomplete, and equalizes the pulsations when their rhythm is disturbed. It is used for cardiac excitement, for all febrile and congestive diseases, and for the chronic affections of the heart. It may be used daily to regulate the cardiac forces and to contribute to longevity. Dose, in acute conditions, one granule every half-hour, or less frequently, as the case requires; in chronic conditions, two to four granules daily may be given.

Elaterine.—In granules containing one milligramme. It is obtained from *elaterium*, and possesses drastic and emmenagogue properties. It may be used for the treatment of constipation and hæmorrhoidal or catamenial suppression. Dose, one to three granules two or three times daily.

Emetic.—In granules containing one centigramme. An emetic, purgative, contra-stimulant, and expectorant, according to the size and frequency of the doses. It is used in bronchitis, dyspepsia, pneumonia, and as a modifier of cardiac nutrition. Dose, for emetic purposes, two granules in water, every ten minutes, until the desired effect is obtained; as a purgative, one granule every half-hour until the effect is produced; as an expectorant, one granule every two hours.

Emetine.—In granules containing one milligramme. An emetic suitable for children, an expectorant, contra-stimulant, and antispasmodic. It is useful in bronchitis, pneumonia, whooping-cough, dysentery, etc. Dose, as an emetic, two to three granules every ten minutes, dissolved in a teaspoonful of water; as an expectorant and antispasmodic, one granule every two or three hours.

Ergotine.—In granules containing one centigramme. It is used as an excito-motor to smooth muscular fibers, in hæmorrhages, atony, and inertia of the uterus. It is also useful in adynamia and in atonic affections of the respiratory apparatus. Dose, three to five granules every quarter of an hour, as a hæmostatic; two granules every two hours to excite muscular action.

Euonymine.—In granules containing one milligramme. A tonic to the digestive apparatus and a cholagogue. It is useful in hepatic disorders, icterus, and dyspepsia. Dose, three to ten granules two or three times daily.

Gelsemine.—In granules containing one half a milligramme. It is antispasmodic and antineuralgic. It is used in odontalgia, sciatica, for intercostal pains, and, in general, for all pain which is more tenacious than severe. Dose, one granule every quarter of an hour, until the desired effect is obtained.

Gregory's Salt.—In granules containing one milligramme. It is a double chloride of morphine and strychnine. Its action is calmative, hypnotic, and anodyne. It may be used for insomnia, simple coughs, abdominal pains, diarrhœa, etc. Dose, one to three granules every quarter of an hour, until the effect has been obtained.

Guaranine.—In granules containing one milligramme. It is a dynamophore which is obtained from *Paullinia sorbilis*. It increases vitality, and is useful in all forms of adynamia. It is also useful for neuralgia and *migraine*. Dose, three granules, three to five times daily.

Helenine. — In granules containing one centigramme. A crystallizable principle which is analogous to camphor, and is obtained from *Inula Helenium.* It is antiseptic, antispasmodic, and stimulant to catarrhal secretions. It is useful in atonic and putrid forms of dyspepsia, in flatulence, in hysterical conditions, and in catarrhal troubles of the bronchi, larynx, and bladder. It may also be used with advantage in whooping-cough, phthisis, and blennorrhagia in its final stage. Dose, one to three granules three to five times daily.

Hydrastine.—In granules containing one milligramme. It is a cholagogue, and a tonic to the digestive apparatus. It is very effective in cases in which there is suppression of the biliary excretion and secretion, and equally so in treatment which is directed against the carcinomatous diathesis. Dose, ten to twenty granules daily.

Hydriodate of Morphine.—In granules containing one milligramme. Its properties are those which are common to the other salts of morphine, but it is especially indicated in cough which arises from irritation of the bronchi, in laryngitis of rheumatic origin, and for osteocopic pains. The dose is one or two granules every quarter of an hour until the effect is obtained.

Hydrobromate of Cicutine.—In granules containing one milligramme. It is a calmative for nervous, vascular, or muscular excitement. It is without some of the inconveniences of morphine, but has not the force of the latter as an antagonist to pain. It is useful in nervous irritability of all kinds, in cough, in meningo-myelitis, in cystalgia, myalgia, etc. Dose, one to two granules every quarter of an hour, in acute conditions, until the effect is produced; and six to twenty granules a day in chronic conditions.

Hydrobromate of Quinine.—In granules containing one milligramme. It is indicated in cases in which the element of pain is associated with that of spasm. Dose, ten to twenty granules, or more, once or more frequently, according to the course of the attack.

Hydrochlorate of Morphine.—In granules containing one milligramme. It is narcotic and anodyne, and is indicated in all forms of neuralgia and nervous irritation; also at the beginning of all forms of inflammation, being usually associated with hyoscyamine, because pain rarely fails to provoke spasm. It is useful in catarrhal affections, and in all exaggerated conditions of sensibility. Dose, one to two granules every quarter of an hour until the effect is produced.

Hydroferrocyanate of Quinine.—In granules containing one milligramme. This salt is antiperiodic like all the salts of quinine; but has, in addition, a particular calmative action which it owes to the hydrocyanic acid, and tonic properties which it owes to the iron in its constitution. It is useful in all diseases in which exacerbations occur, and also during the remittent period of all the pyrexias.

Hyoscyamine.—The alkaloid of hyoscyamus. In granules containing one half a milligramme. It is antispasmodic, calmative, and analgesic. It is useful in all nervous affections in which there is excessive contractility. It gives good results in constipation, strangulated hernia, intestinal occlusion, enteralgia, gastralgia, photophobia, dysuria, etc. It diminishes the secretions of the mucous and sweat glands, and for that reason is useful in bronchitis, bronchorrhœa, ptyalism, tuberculosis, etc. Dose, one granule every half-hour until the desired result is obtained; or, one granule three to five times daily, according to the severity of the case.

Hypophosphite of Lime.—In granules containing one centigramme. It is a means of alimentation for the bony and nervous systems. In rachitis and all affections in which vitality is lowered, and in cases in which the hypophosphite of strychnine is too energetic a stimulant, this salt is indicated. The dose is ten to twenty granules daily.

Hypophosphite of Sodium.—In granules containing one centigramme. The doses and indications are the same as the foregoing.

Hypophosphite of Strychnine.—In granules containing one half a milligramme. It is a tonic and stimulant to the nervous system, improving its functional action and nutrition. It is useful in all cases of vital depression caused by overwork, age, or disease. It is indispensable in pneumonia in the aged, in all adynamic affections, in rachitis, chloro-anæmia, and in the prostration which accompanies convalescence from severe diseases. Dose, six to forty granules daily.

Iodoform.—In granules containing one milligramme. It is a disinfectant with a calmative action, and a modifier of nutrition, especially with reference to the lymphatic system. It is useful in bronchitis, pulmonary gangrene, offensive breath, the lymphatic diathesis, and syphilis. It is also useful for the pain and congestion which accompany rheumatism. Dose, one to three granules every half-hour, for acute conditions; three to five granules from three to five times daily in chronic conditions.

Iridine.—In granules containing one milligramme. It is a cholagogue and exciter of intestinal contractility. It is useful in cases in which there is suppression of the biliary excretion, in icterus, and in hepatic cirrhosis; diuretic effects have also been ascribed to it. Dose, two granules five to ten times daily.

Jalapine.—In granules containing one milligramme. Its action is tonic upon the small intestine. In small doses its action as a purgative is uncertain; in large doses it is a drastic cathártic. Dose, six to twenty granules daily.

Juglandine.—In granules containing one milligramme. Vermifuge, depurative, and antisyphilitic action has been attributed to this drug. It has been used with success for scrofula and weaknesses in which the torpid element predominates. Dose, six to twelve granules daily.

Kermes Mineral.—In granules containing one centigramme. This drug has a modifying influence upon the respiratory apparatus and the cardiac nutrition. It is useful as an expectorant, and also in chronic diseases of the heart in the hypertrophic stage. Dose, six to twenty granules daily.

Kousseine.—In granules containing one milligramme. A vermifuge, particularly for children. Dose, one to five tubes in the course of an hour.

Lactate of Iron.—In granules containing one centigramme. An iron salt, which is usually well tolerated, even by those who have stomachs which are sensitive to the astringent action of iron. It may be used in chlorosis, anæmia, atonic diarrhœas, etc. Dose, three to ten granules daily.

Leptandrine.—In granules containing one milligramme. It is cholagogue and tonic to the organs of the digestive apparatus. It is useful in the hepatic diseases, in enteritis, in choleriform diarrhœa, etc. Dose, six to twenty granules daily.

Lobeline.—In granules containing one half a milligramme. It is expectorant and antispasmodic, is useful in acute and chronic affections of the respiratory apparatus, especially in those of children. Dose, four to twelve granules daily.

Lycopine.—In granules containing one milligramme. A narcotic and astringent action has been attributed to it, which would make it useful in cases of convulsive cough and other pulmonary affections. Dose, six to ten granules daily.

Monobromate of Camphor (*Bromide of Camphor*).—In granules containing one centigramme. It is antispasmodic and calmative to the nervous system. It possesses also antithermic and hypnotic properties.

It is indicated in convulsions, hysteria, insomnia, epilepsy, tetanus, palpitations, etc. It is also very useful in bronchitis in cases in which the catarrhal element is associated with a spasmodic one. Dose, one to three granules, at suitable intervals, according to circumstances.

Narceine.—In granules containing one milligramme. Calmative, antispasmodic. Its uses are the same as those of codeine. Dose, six to twenty granules daily.

Nitrate of Pilocarpine.—In granules containing one milligramme. It is diaphoretic, sialogogue, and diuretic. It is useful in bronchitis, pleuritis, coryza, asthma, stomatitis, and pharyngitis. Dose, ten to thirty granules daily.

Pepsin.—In granules containing one centigramme. An aid to digestion, which is given with the aim of supplying the deficiency as to gastric juice, or to aid the gastric forces. It is useful in dyspepsia, enteritis, etc. Dose, two to four granules with each meal.

Phosphate of Iron.—In granules containing one centigramme. By virtue of the iron it acts as a tonic to the blood, and by the phosphorus to the bones and nervous system. It is useful in chloro-anæmia, in rachitis, in the lymphatic diathesis, during convalescence, etc. Dose, six to twelve granules daily.

Phosphite of Zinc.—In granules containing one milligramme. A tonic to the nervous system. It is useful in all the forms of nervous debility, in scrofula, tuberculosis, etc. Dose, five to fifteen granules daily.

Picrotoxine.—In granules containing one half a milligramme. It has a calmative effect upon the bulbar centers, and is a stimulant to thermogenesis, being manifested by symptoms of congestion upon the face. It is applicable in different spasmodic affections of the respiratory centers, of which asthma, whooping-cough, etc., will serve as examples. In cases in which there is pleuritic effusion, it also relieves dyspnœa and favors the resorption of the effusion. Dose, in acute conditions, one granule every hour until the effect is obtained; in chronic conditions, two to three granules two to three times daily.

Piperine.—In granules containing one milligramme. It stimulates the digestive functions, and those of mucous membranes as well. It is useful in anorexia, blennorrhœa, and chronic bronchitis. It is contra-indicated in irritative conditions of the gastro-intestinal canal. Dose, one to two granules three to five times daily.

Podophyllin.—In granules containing one centigramme. Its cholagogue and purgative action can be relied upon, though it comes on slowly and without the production of colicky pains. It is of use in constipation, intestinal occlusion, gastritis, and icterus. Dose, in acute cases, three granules every hour until the desired result is obtained; in chronic cases, three to five granules before going to bed at night. As a purgative, five granules may be given every half-hour, for three or four doses.

Protiodide of Mercury.—In granules containing one centigramme. It is cholagogue and antisyphilitic. Dose, three to fifteen granules daily.

Quassine.—In granules containing one milligramme. It is a bitter tonic, stomachic, and regulator of the biliary excretion. It is useful in all conditions of weakness and atony, in anorexia, and in most forms of dyspepsia, in conditions of convalescence, and as a stimulant to digestion, especially if there is a tendency to a hypersecretion of mucus on the part of the gastric glands. When combined with hyoscyamine or morphine, it mitigates the stupefying action of those alkaloids. It is very useful in that form of gastric catarrh to which drunkards are subject, in cough, in palpitations, and in that form of headache which is of gastric origin. Dose, one to five granules before each meal.

Salicylate of Ammonia.—In granules containing one centigramme. It is a most valuable antiseptic, and is of use in rheumatism and in all infectious and septicæmic conditions. It is of use in cases in which there has been inoculation with poison, and for a fetid condition of the breath. Dose, one to three granules every two hours, or every hour in acute cases.

Salicylate of Iron.—In granules containing one centigramme. It restores the blood to a healthy condition, and prevents decomposition. It is useful in chloro-anæmic conditions complicated with rheumatism, in dyspepsia attended with fermentation, in scorbutus, purpura, etc. Dose, two to three granules three to five times daily.

Salicylate of Quinine.—In granules containing one centigramme. It is useful for the periodic symptoms of all rheumatic and infectious diseases. Dose, ten to forty granules once or several times daily.

Salicylate of Sodium.—In granules containing one centigramme. It is useful for rheumatic conditions, gout, and dyspepsia which is accompanied with fermentation. Dose, three to five granules two to three times daily.

Santonine.—In granules containing one centigramme. It is the active principle of the *semen contra*, and is used to destroy intestinal parasites. Dose, six to fifteen granules for one or two evenings, in connection with two to four granules of podophyllin, or with a Sedlitz powder.

Scillitine.—In granules containing one milligramme. It is diuretic and expectorant in its action, and tends to diminish the viscosity of mucous discharges. It is employed in bronchitis of the dry form, in whooping-cough, and in heart-disease in which there is diminished flow of urine. Dose, one to two granules every two hours, or less frequently in chronic cases.

Sedlitz (effervescent).—A saline purgative combined with sugar, in a granular form. A small teaspoonful may be taken daily as a mild cathartic; or, as a purgative, a dessertspoonful may be taken every two hours in cold water until the desired effect is obtained. It may be used as an ordinary drink during the latter end of pyrexial troubles and infectious diseases.

Subnitrate of Bismuth.—In granules containing one centigramme. It is an absorbent, an antispasmodic, and a disinfectant to the digestive apparatus. It is used in gastralgic forms of dyspepsia, in the chronic diarrhœa of children, and for eructations of an offensive character. Dose, five to ten granules, before eating.

Sulphate of Atropine.—In granules containing one half a milligramme. Its action is the same as, though feebler than, that of atropine, and it is used in similar cases. Dose, one granule every half-hour until the desired effect is produced; or, two to three granules once or twice daily for incontinence of urine, epilepsy, the sweating of phthisis, etc.

Sulphate of Calabarine.—In granules containing one half a milligramme. It increases the energy of contractility of the circular fibers; it is useful in atonic conditions of the intestines. Dose, six to twelve granules daily.

Sulphate of Quinine.—In granules containing one centigramme. It is an antiperiodic which is useful in all paroxysmal diseases, but especially in the intermittent fevers. It has a tonic action upon contractility. Dose, six to twenty granules, or more, daily.

Sulphate of Strychnine.—In granules containing one half a milligramme. Its properties, uses, and doses are the same as those of the arseniate of strychnine. The sulphate is to be preferred if it is desired to obtain simply a neurosthenic effect.

Sulphide of Calcium.—In granules containing one centigramme. It is the best of the parasiticides. It is indispensable in the treatment of all infectious diseases; for example, croup, measles, variola, erysipelas, cholera, etc. It is equally useful in catarrhal troubles, particularly in those of the respiratory apparatus. It is also of use in different dermatoses. Dose, one granule every quarter of an hour, in the acute stage; two to five, three times a day, in the chronic.

Tannate of Cannabine.—In granules containing one milligramme. It is obtained from Indian hemp, and is a valuable drug on account of its calmative and analgesic properties, while it has not the disadvantages of morphine. It may be used in gastralgia, and for all pains of a spasmodic character, when it is desirable to soothe and avoid excitation. Dose, for acute conditions, two granules every quarter of an hour until the effect is produced; for chronic conditions, three granules three to five times daily.

Tannate of Pelletierine.—In granules containing one milligramme. If it is to be used as a tænifuge, the granules should contain a centigramme. When used for the latter indication, ten to fifteen tubes may be taken in water at once, or at frequent intervals, and the dosage continued until twenty-five to thirty centigrammes of the drug have been taken, this being the quantity which is requisite to expel the tænia. It may also be used in certain congestive forms of headache. The dose for headache is five granules hourly until the effect is produced. In cases in which it is taken as a tænifuge, a purgative should follow after a short period to facilitate the effect.

Valerianate of Atropine.—In granules containing one half a milligramme. It is antispasmodic, and is particularly indicated in neuroses of a convulsive character, and in cerebral anæmia. It is also effective in the different forms of vesania. Dose, one granule every half-hour until the desired effect is produced, in acute conditions; two granules two or three times daily in chronic.

Valerianate of Caffeine.—In granules containing one milligramme. It has an antispasmodic and anticongestive action upon the brain. It may be used in headache, vertigo, cerebral torpor, etc. Dose, one to three granules every half-hour.

Valerianate of Iron.—In granules containing one centigramme. It is useful in neuroses, chloro-anæmia, and those forms of anæmia which are accompanied by gastralgia and headache. Dose, one to three granules three times daily.

Valerianate of Quinine.—In granules containing one centigramme. Its action is antiperiodic and antispasmodic. It is particularly useful in malarial or intermittent affections with nervous phenomena. It is an excellent tonic. Dose, two to five granules three to five times daily.

Valerianate of Zinc.—In granules containing one centigramme. It is antispasmodic, and checks nervous mobility. It is useful in neuropathies in cases in which iron is contra-indicated. Dose, six to twenty granules daily.

Veratrine.—In granules containing one half a milligramme. It is a calmative of muscular contractility, a defervescent, and a contra-stimulant. It is of use in rheumatism, congestive dermatoses, chorea, and all febrile conditions in which the pulse is hard and full. In gastric troubles it tends to excite the appetite. For children it serves as an excellent emetic. Dose, one to three granules at suitable intervals, according to the case.

LIST OF DISEASES AND CONSPICUOUS MORBID ELEMENTS,

WITH THE INDICATIONS FOR THOSE DOSIMETRIC DRUGS
WHICH WOULD BE MOST APPLICABLE
TO THE GIVEN CASES.

LIST OF DISEASES AND CONSPICUOUS MORBID ELEMENTS.

A

Accidents at the critical period		Aconitine. Sedlitz.
Acne		Veratrine. Sulphide of calcium.
Acne sebacea		Arsenious acid. Arseniates.
Acrinia, pancreatic		Nitrate of pilocarpine. Calomel.
Action, nervous	Increased	Aconitine, hyoscyamine.
	Depressed	Phosphoric acid, strychnine.
Adynamia		Sulphate of strychnine. Salicylate of ammonia.
Agalaktia		Arseniate of iron. Phosphate of iron.
Agony		Hydrochlorate of morphine. Arseniate of strychnine.
Albuminuria		Aconitine. Digitaline.
Algidity		Hypophosphite of strychnine. Phosphoric acid.
Alienation, mental		Tannate of cannabine. Hyoscyamine, digitaline.
Alkalescence		Salicylic acid. Tannic acid.
Alkaloids, poisoning by the	Stimulants	Tannic acid. Aconitine.
	Depressants	Tannic acid. Strychnine.
Amaurosis		Sulphate of strychnine. Anemonine.
Amenorrhœa	Plethoric	Aconitine, veratrine.
	Anæmic	Iron, strychnine.
	Spasmodic	Hyoscyamine.
	Tonic	Ergotine.
Amnesia		Cubebine. Atropine.
Amygdalitis		Aconitine. Cocaine.

Anæmia		Arseniate of iron. Arseniate of manganese.
Anæsthesia		Hypophosphite of strychnine, Phosphoric acid.
Anaphrodisia		Strychnine. Phosphide of zinc.
Anasarca (dropsy), acute		Aconitine. Digitaline.
Aneurism		Digitaline. Ergotine.
Angina pectoris		Daturine. Brucine.
Anginæ, acute		Aconitine. Cocaine.
Anosuria		Veratrine.
Apepsia		Pepsin.
Apoplexia		Ergotine. Caffeine.
Appetite, for food	Increased	Hyoscyamine.
	Diminished	Quassine.
Appetite, sexual	Increased	Bromide of camphor.
	Diminished	Strychnine.
Arrest of growth in children		Carbonate of lithia. Hypophosphites of lime and sodium.
Arthritis, chronic		Iodoform.
Ascites		Arseniate of strychnine. Nitrate of pilocarpine.
Asialorrhœa		Nitrate of pilocarpine. Quassine.
Asphyxia		Strychnine.
Asthenia		Sulphate of strychnine.
Asthma		Hyoscyamine. Sulphide of calcium.
Asystolia		Digitaline. Caffeine.
Ataxia		Bromide of camphor. Gelsemine.
Ataxia, partial muscular		Veratrine. Atropine.
Ataxia, progressive locomotor		Phosphite and valerianate of zinc.
Ataxisystolia		Digitaline.

B

Biliousness	Sedlitz Chanteaud. Podophyllin.
Blennorrhagia	Aconitine. Helenine.
Blennorrhœa	Helenine. Strychnine.

Bodies, foreign, in the œsophagus	Emetic.
Boulimia	Hyoscyamine. Morphine.
Bronchitis	Aconitine. Morphine. Apomorphine.
Bronchorrhœa	Sulphide of calcium. Atropine.
Bubo	Iodoform. Aconitine.

C

Cachexiæ	Arseniate of strychnine. Arseniate of iron.
Calculi, biliary and urinary	Benzoate of lithia. Hyoscyamine.
Cancer	Hydrastine. Cicutine.
Cancerous diarrhœa	Salicylate of iron. Pepsin.
Carus	Caffeine. Strychnine.
Catarrh, dry pulmonary	Scillitine. Emetine.
Catarrh of the stomach	Veratrine. Quassine.
Catarrh, suffocative	Hypophosphite of strychnine. Piperine.
Catarrhal affections	Nitrate of pilocarpine. Atropine.
Cephalalgia	Caffeine. Guaranine.
Cephalalgia, rheumatismal	Colchicine. Cyanide of zinc.
Chlorosis	Arseniate of iron. Arseniate of manganese.
Cholera	Phosphoric acid. Strychnine. Sulphide of calcium.
Cholera, infantile	Codeine, brucine. Hydrochlorate of morphine.
Cholerine	Sedlitz. Brucine, morphine.
Chorea	Veratrine. Hyoscyamine.
Chyluria	Strychnine. Quassine,
Colic, hepatic	Hyoscyamine. Salts of lithia.
Colic, lead	Podophyllin. Strychnine. Atropine.

Congestion, atonic, of the brain	Nitrate of pilocarpine. Strychnine.
Congestions	Aconitine. Sedlitz.
Conjunctivitis, chronic	Arsenious acid. Iodoform.
Constipation	Podophyllin. Sedlitz Chanteaud.
Contractures	Hyoscyamine. Croton chloral.
Convulsions	Phosphoric acid. Gelsemine.
Convulsive state	Hyoscyamine. Bromide of camphor.
Cough, whooping	Sulphide of calcium. Helenine.
Cramps	Bromide of camphor. Hyoscyamine.
Croup	Sulphide of calcium. Salicylate of ammonia.
Cystinuria	Juglandine.
Cystitis, chronic	Arbutine. Helenine.
Cystitis, from use of cantharides	Bromide of camphor. Hyoscyamine.

D

Deafness	Aconitine. Cocaine.
Delirium, alcoholic	Strychnine. Digitaline.
Dentition, painful	Cocaine. Codeine.
Depression, nervous	Phosphoric acid. Sulphate of strychnine.
Dermalgia	Cicutine. Tannate of cannabine.
Diarrhœa	Morphine. Strychnine.
Diathesis, hæmorrhagic	Ergotine. Arseniate of iron.
Diathesis, purulent	Iodoform. Arseniate of sodium.
Diphtheria	Sulphide of calcium.
Dry tetter	Arsenious acid. Arseniates.
Dysentery	Emetine. Hyoscyamine.
Dysmenorrhœa	Veratrine. Hyoscyamine.
Dyspepsia	Pepsin. Diastase.

Dyspnœa	Picrotoxine. Hydrobromate of cicutine.
Dysuria	Atropine. Strychnine. Bromide of camphor.

E

Eclampsia, infantile	Phosphoric acid. Hydrobromate of quinine.
Eclampsia, puerperal	Morphia. Bromide of camphor.
Ecthyma, chronic	Juglandine. Arseniate of potash.
Eczema, chronic	Sulphide of calcium. Arseniate of soda.
Engorgement, chronic	Iodoform. Arseniate of iron.
Ephidrosis	Atropine. Strychnine.
Epilepsy	Atropine. Bromide of camphor.
Epistaxis	Ergotine. Tannic acid.
Epizoaries	Sulphide of calcium.
Erethism, cerebral	Aconitine. Digitaline.
Erethism, sexual	Cicutine. Bromide of camphor.
Eruptions, recurrent	Sulphide of calcium. Picrotoxine.
Erysipelas	Sulphide of calcium.
Esthiomène (rodent ulcer)	Juglandine. Phosphate of iron.
Excrescences, epidermic	Salicylic acid.
Expectoration, viscous	Scillitine. Helenine.

F

Favus	Sulphide of calcium.
Fever	Aconitine. Veratrine. Digitaline.
Fever, eruptive	Sulphide of calcium.
Fever, intermittent	Arsenious acid. Arseniate of quinine.
Fever, mucous	Nitrate of pilocarpine. Sedlitz Chanteaud.
Fever, pernicious	Sulphate of quinine. Arseniate of strychnine.
Fever, puerperal	Aconitine. Salicylate of quinine.

Fever, typhoid		Aconitine. Arseniate of strychnine.
Fever, urethral		Aconitine. Hydrobromate of quinine.
Fever, yellow		Aconitine. Sulphide of calcium.
Finger, numbness in		Hypophosphite of strychnine.
Fissures, anal		Daturine.
Fistulæ, anal		Iodoform. Arseniate of iron.
Flatulence		Sulphate of strychnine. Euonymine.
Flowers, white (leucorrhœa)		Iodoform. Arseniate of iron.
Flux, menstrual	Excessive	Ergotine.
	Deficient	Veratrine.

G

Galactorrhœa	Phosphate of iron. Arseniate of strychnine.
Gangrene, senile	Hypophosphite of strychnine.
Gas, gastro-intestinal	Nitrate of bismuth.
Gastralgia	Tannate of cannabine. Hydrobromate of morphine.
Gastrodynia	Veratrine. Quinine.
Glossitis	Aconitine.
Glycosuria	Cocaine. Benzoic acid.
Gout	Salicylate of lithine. Colchicine.

H

Hæmatemesis	Ergotine.
Hæmoptysis	Ergotine. Veratrine.
Hæmorrhage	Ergotine. Sulphate of strychnine.
Hæmorrhaphilia	Ergotine. Arseniate of iron.
Hæmorrhoids	Aconitine. Strychnine.
Hernia, strangulated	Atropine. Podophyllin.
Herpes circinatus	Sulphide of calcium.
Herpetism	Arseniate of soda. Sulphide of calcium.
Hydræmia	Lactate of iron. Arsenious acid.

Hydropsy	Digitaline. Strychnine.
Hydrorrhachis	Iodoform. Ergotine.
Hydrothorax	Nitrate of pilocarpine.
Hyperacusis	Valerianate of quinine. Narceine.
Hyperosmia	Hydrobromate of morphine.
Hypersecretion, pancreatic	Morphine. Hyoscyamine.
Hypersystolia	Digitaline.
Hyperthermia	Aconitine.
Hypnosis	Valerianate of atropine. Valerianate of caffeine.
Hypoglobulia	Arseniate of iron.
Hysteralgia	Gelsemine. Hyoscyamine.
Hysteria	Bromide of camphor. Valerianate of atropine.

I

Ichthyosis	Arsenious acid.
Impetigo, chronic	Phosphoric acid. Sulphide of calcium.
Incontinence of urine, nocturnal	Atropine. Brucine.
Indigestion	Emetic. Pepsin.
Inertia, uterine	Ergotine. Strychnine.
Inflammations	Aconitine. Strychnine.
Insomnia	Hydrochlorate of morphine. Tannate of cannabine.
Intertrigo	Tannic acid. Veratrine.

L

Laryngitis stridulus	Sulphide of calcium. Benzoic acid.
Leucocythæmia	Hydroferrocyanate of quinine. Arseniate of iron.
Leucorrhœa	Phosphate of iron. Iodoform.
Lumbrici	Santonine. Calomel.
Lupus	Iodoform.
Lymphatic diathesis	Juglandine. Iodoform.

M

Meningitis, granular	Iodoform. Arseniate of quinine.
Meningitis, infantile	Aconitine. Hyoscyamine.
Mentagra	Arseniate of potash. Biniodide of mercury.
Metritis, puerperal	Aconitine. Salicylate of quinine.
Metritis, simple	Aconitine. Ergotine.
Metrorrhagia	Ergotine. Strychnine.
Miasm	Sulphide of calcium. Salicylic acid.
Migraine	Quassine. Caffeine.
Morphine, poisoning by	Hyoscyamine. Caffeine.
Muscarine, poisoning by	Atropine. Daturine.

N

Nævi materni	Ergotine.
Nausea	Quassine. Codeine.
Neuralgia	Aconitine. Hydrobromate of morphine.
Neuralgia, cranial	Cocaine. Croton chloral.
Neuralgia, general	Cicutine. Tannate of cannabine.
Neuralgia, paludal	Hydrobromate of quinine. Valerianate of caffeine.
Neuralgia, vesical	Bromide of camphor. Helenine.
Neuroses	Hyoscyamine. Strychnine.
Nicotine, poisoning by	Caffeine. Strychnine.

O

Obesity	Strychnine. Iodoform.
Œdema	Sulphate of strychnine. Digitaline.
Oligæmia	Arseniate of iron. Phosphoric acid.
Oligocholia	Podophyllin. Colchicine.
Oliguria	Asparagine. Arbutine.

Ophthalmia, scrofulous	Arseniate of soda. Iodoform.
Orgasm, sexual	Bromide of camphor. Cicutine.
Osteitis, scrofulous	Iodoform. Hypophosphites.
Osteomalacia	Hypophosphite of lime. Hypophosphite of soda.
Otalgia	Hydrobromate of morphine. Cocaine.
Oxaluria	Sedlitz Chanteaud. Phosphoric acid.
Ozæna	Iodoform. Sulphide of calcium.

P

Pains	Morphine. Tannate of cannabine.
Pains, spasmodic	Bromide of camphor. Hyoscyamine.
Palpitations	Digitaline. Aconitine.
Paludal poisoning	Arseniate of quinine. Arseniate of caffeine.
Paralyses	Strychnine. Phosphoric acid.
Paraplegia	Phosphide of zinc. Colocynthine.
Parasites	Sulphide of calcium. Salicylates.
Peritonitis, puerperal	Aconitine. Salicylate of quinine.
Phlegmorrhagia	Atropine. Morphine.
Phosphaturia	Sedlitz Chanteaud. Asparagine.
Photophobia	Daturine. Gelsemine.
Pityriasis	Sulphide of calcium. Arsenious acid.
Plethora	Aconitine. Sedlitz Chanteaud.
Pneumatosis	Strychnine. Quassine.
Pneumonia	Aconitine. Nitrate of pilocarpine.
Pollutions	Strychnine. Hydrobromate of cicutine.
Polycholia	Leptandrin. Sedlitz Chanteaud.
Polyhæmia	Aconitine. Sedlitz Chanteaud.

Polyuria		Hydrochlorate of morphine. Gregory's salt.
Priapism		Bromide of camphor. Hyoscyamine.
Prolapsus		Ergotine. Sulphate of strychnine.
Prosopalgia		Aconitine. Phosphide of zinc.
Pruritus vulvæ		Cicutine. Gelsemine.
Purpura		Ergotine. Valerianate of iron.
Pustule, malignant		Sulphide of calcium. Salicylate of ammonia.
Putridity		Salicylate of ammonia. Salicylic acid.

R

Rectum, inflammation of		Daturine. Emetine.
Rhachitis		Hypophosphite of lime. Phosphate of iron.
Rheumatic diathesis		Colchicine. Salicylate of soda.
Rheumatism, acute		Colchicine. Veratrine.
Rubeola (measles)		Sulphide of calcium. Salicylate of quinine.

S

Scarlatina		Sulphide of calcium. Veratrine.
Sciatica		Aconitine. Gelsemine.
Scorbutic diathesis		Arseniate of iron. Ergotine.
Scrofula		Juglandine. Iodoform.
Secretions, biliary	Excessive	Sedlitz Chanteaud.
	Insufficient	Podophylline.
Secretions, gastric	Excessive	Benzoate of lithia.
	Insufficient	Pepsin.
Secretions, intestinal	Excessive	Hydrochlorate of morphine.
	Insufficient	Elaterine.
Secretions, salivary	Excessive	Sulphate of atropine.
	Insufficient	Nitrate of pilocarpine.
Sensibility	Increased	Tannate of cannabine.
	Diminished	Phosphoric acid.
Septicæmia		Salicylate of ammonia. Salicylate of quinine.

Sialorrhœa		Hyoscyamine. Tannic acid.
Somnolence		Caffeine.
Soporous habit		Caffeine. Cocaine.
Spasm		Valerianate of atropine. Bromide of camphor.
Spermatorrhœa		Hypophosphite of strychnine. Hydrobromate of cicutine.
Spleen, hypertrophy of		Sulphate of quinine. Ergotine.
Strychnine, poisoning by		Hyoscyamine. Tannic acid.
Suppuration		Iodoform. Arseniate of soda.
Sweating	Increased	Sulphate of atropine. Agaricine.
	Diminished.	Aconitine. Sulphide of calcium.
Swellings, white		Juglandine. Iodoform.
Sycosis		Arseniate of potash. Biniodide of mercury.
Syncope		Phosphoric acid. Sulphate of strychnia.
Syphilitic eruptions		Arsenious acid. Protiodide of mercury.
Syphilis		Biniodide of mercury. Protiodide of mercury.

T

Tenesmus		Hyoscyamine. Emetine.
Terrors, nocturnal		Bromide of camphor. Valerianate of atropine.
Tetany		Bromide of camphor. Croton chloral.
Thermogenesis	Increased	Aconitine.
	Diminished.	Picrotoxine.
Thirst		Quassine. Aconitine.
Tic-douloureux		Atropine. Aconitine.
Tic, indolent		Sulphate of strychnine. Valerianate of zinc.
Torpor, hepatic		Jalapine. Podophylline.
Trismus, of the newly born		Bromide of camphor. Gelsemine.
Tuberculosis		Iodoform. Arseniate of iron.

U

Ulcers	Arseniate of strychnine. Phosphoric acid.
Uræmia	Sedlitz Chanteaud. Benzoate of lithia.
Urethritis, chronic	Helenine. Arbutine.

V

Vaginismus	Daturine. Bromide of camphor.
Vaginitis	Aconitine. Helenine.
Variola	Sulphide of calcium. Salicylates.
Vertigo	Caffeine. Valerianate of atropine.
Virus	Sulphide of calcium. Salicylate of ammonia.
Visceralgia	Colchicine. Aconitine.
Volvulus	Podophyllin. Hyoscyamine.
Vomiting	Quassine. Sulphide of strychnine. Codeine.

ELEMENTS OF
DOSIMETRIC THERAPEUTICS.

DOSIMETRIC PRACTICE.

ELEMENTS OF DOSIMETRIC PRACTICE.

Abscess of the Liver.—See Suppurative Hepatitis (under *Hepatitis*).

Adenitis.—Adenitis, or ganglitis, is a very common disease, and is due to a great variety of causes which tend to irritate the tissues of lymphatic glands. Whatever its cause, the common effect is an inflammation; therefore the *dominant* should consist in the use of aconitine to overcome the inflammatory element. Whenever the disease is due to the presence in the circulation of infectious material, as in erysipelas, variola, etc., it is better to discard the mode of treatment which regards only the local accident, and seek to obtain a cure by means of efficient pathogenic medication.

The more intense the local inflammatory symptoms, and the more elevated the fever, the more frequently should aconitine be administered. After the fever has somewhat subsided, one granule every two hours will suffice. The induration due to congestion, which characterizes the first stage, should be combated with energy in order to prevent its evolution during the subsequent periods. Should we see the case in its earliest stage, we should aim to abort the disease; and, with this end in view, should give one granule of aconitine every hour until the desired effect is obtained. Emollient and absorbent local applications are suitable for this condition, to facilitate the disappearance of hyperæmia. Among the resolvents we prefer iodoform dissolved in collodion, and applied in such a way as to cover the affected gland. This formula might be used:

℞ Iodoformi .... 2 grammes.
Collodii elastici............. 30 "

The pain which accompanies suppuration may be quieted by the hydrobromate of cicutine, two granules being given every half-hour until a sedative effect is obtained. For the fever give hydrobromate of quinine, in addition to aconitine, to combat the intermittent character which is usually present; three to five granules may be given every two hours. After the gland has suppurated, iodoform associated with arseniate of soda may be given in doses of two granules of each, four times daily. Chronic induration, which almost always follows scrofula or inflammation of the lymphatic glands, will require the use of juglandine and of iodoform, three granules being given three or four times daily. Topically, iodoform and collodion may be used as already prescribed.

ADENITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Congestive induration	Aconitine.
		Pain	Hydrobromate of cicutine.
		Fever	Hydrobromate of quinine.
		Suppuration	Iodoform. Arseniate of soda.
		Chronic induration	Iodoform. Juglandine.

Albuminuria.—See Nephritis.

Alienation, Mental (*Vesania*, *Phrenopathies*).—For obvious reasons, it will be impossible to indicate the particular treatment for each variety of phrenopathy. The practitioner should always observe with the most careful attention the mental perturbations which result from material injuries to the brain, and should distinguish them from those which are purely functional, whether the vitality of the psychical organ is directly affected, or whether it is modified by the intermediate influence of organs which are not directly associated with the work of the brain. In the first instance, those agents which modify nutrition, the iodides, iodoform, the arseniates, phosphides, zinc, iron, etc., will give desirable results only on condition that the treatment is continued for a long time; in the second case, the dynamic modifiers, if well selected, will give results which are much more prompt and more manifest. The difficulty consists in defining with accuracy the essential quality and direction of the dynamic perturbation, and this difficulty is often insurmountable, because the complication and multiplicity of nervous phenomena do not readily permit an absolute detection of the want of primary equilibrium. If this elementary diagnosis is impossible, and we are unable to make trial of the entire series of vital modifiers until that one is found which will correct the want of equilibrium, we must begin by giving one of the principal agents of this series, either strychnine or hyoscyamine, until an effect is produced. If the action of strychnine, as far as its therapeutic effect is concerned, appears inappropriate, we must substitute hyoscyamine for it, and *vice versa.*

This is a kind of interrogation or exploration which is entirely prudent, and Dr. Burggraeve has very justly called it the *touchstone* method. However skillful the physician may be, he will often be obliged to resort to this method in order to find out accurately the way he should follow. The dosimetric method, by giving us the means of obtaining gradually effects which are progressive, is the only one which pursues this cautious plan of diagnosis without any risk to the patient.

As the circulation has a great influence upon the brain, greater indeed than upon any other organ, we are compelled to resort to agents which will regulate it, for the phrenopathies may depend upon a mild congestion, or upon anæmia of some encephalic region. We should therefore give aconitine to combat hyperæmia; morphine, strychnine, phosphoric acid, and arseniate of iron to relieve anæmia; and digitaline or caffeine to regulate the distribution of the blood. These are the drugs which we will have occasion to use in obscure cases for the purpose of modifying nervous vitality.

The mobility of nervous phenomena may cause us to lose, in a short period of time, the advantage of prolonged treatment; for the same reason, anæmia may be rapidly changed into congestion, or spasm transformed into paralysis. The inefficiency of treatment for many cases of vesania, which could be easily cured if proper regard were paid to anatomical conditions, can only be explained by the extreme facility with which dynamic troubles are transformed into those of an opposite character, thus giving rise to innumerable combinations, by means of which the normal equilibrium may be disturbed. This mobility is to be combated by the cyanide, the phosphide, or the valerianate of zinc, joined with strychnine or brucine, selection from these drugs to be made according as the phenomena of excitation or of depression predominate. If the effect of strychnine or brucine is of an exciting character, they may be replaced by caffeine, cocaine, or guaranine, which regulate the vital actions, and are therefore excellent modifiers of the cerebral functions. We will refrain from prescribing fixed doses for these different indications, for that can be established only by the study of each particular case. At one time it will be necessary to force the dosage until there is an extraordinary accumulation; at another, to reduce it to proportions which are almost homœopathic. We should observe, however, that this delay or even absence of effect after frequently repeated doses is due to a kind of apathy, or an inhibition, as to the action of drugs, in the given case; on the other hand, in other cases, very small doses will quickly produce decided effects on account of an erethism with respect to the action of drugs. But as these modalities are very variable, it may happen that before increasing the doses the moment may be suddenly reached in which the dosage becomes efficient or even excessive. Hence the necessity of proceeding with great prudence, and of interrogating the vitality continually, in order that it may indicate to us with certainty the modifications which should be introduced into the therapeutic arrangement.

MENTAL ALIENATION.	DOMINANT.	Want of nervous equilibrium.	Arseniate of strychnine. Hyoscyamine.
	VARIANT.	Hyperæmia	Aconitine. Digitaline.
		Anæmia	Arseniate of iron. Morphine.
		Nervous mobility . . .	Caffeine. Guaranine. Cyanide of zinc. Valerianate of zinc.
		Spasms	Valerianate of atropine. Gelsemine.
		Atony and paralysis . .	Phosphoric acid. Ergotine.
		Encephalopathies . . .	Iodides. Arseniates. Phosphides.

Amenorrhœa.—The absence of menstruation may be accompanied by morbid phenomena, more or less complex in character; or it may produce neither symptom nor inconvenience. It may be either permanent or transitory, and may depend upon organic lesions of the sexual organs, or upon a constitutional state. In the first case, hæmorrhage from the cavity of the uterus is prevented by atresia of the genital organs; in the second case there is no hæmorrhage, and consequently no retention of blood. In the cases of atresia or obturation of the *cervix uteri*, nothing can be done by the use of drugs, except to soothe the irritability of the uterus, which is caused by the permanent contact of the menstrual fluid, this irritability being especially marked at the menstrual epoch. We may give, then, cicutine and tannate of cannabine, three granules at a time, as often as seems necessary; and, if there are painful contractions with reflex phenomena, we can give one granule of hyoscyamine every half-hour.

Changes in the constitutional condition sometimes give rise to amenorrhœa of a transient character. Such cases may be associated with chlorosis, in which iron would be indicated; with tuberculosis, for which we would give iodoform; with syphilis, for which we would give mercury; with polysarcia, for which we would prescribe suitable diet, exercise, and strychnine. The emmenagogues are contra-indicated in this condition.

AMENORRHŒA.	DOMINANT.	Permanent		Surgical measures.
		Transient	Chlorosis	Iron.
			Tuberculosis	Iodine.
			Polysarcia	Strychnine.
			Syphilis	Mercury.
	VARIANT		Spasm	Tannate of cannabine.
			Pain	Hyoscyamine.
			Irritability	Cicutine.
			Congestion	Aconitine.

Amygdalitis.—The following remarks apply particularly to the simple form of acute amygdalitis, which is the most frequent of all forms; but we shall indicate, also, the differences in treatment which are imposed by morbid diathetic elements, which not only complicate the disease, but also render its medical treatment more complex. The disease is generally benign, but its treatment differs according to its duration and the presence of complications which aggravate the prognosis and make the disease itself less tolerable to the patient. A short time ago the proper treatment of this angina was believed to consist in the use of leeches and emollient or astringent gargles. These means are sometimes ineffective, if not actually harmful. The result of depletion is to weaken the tonsils, and consequently to predispose to the development of the disease into a chronic form, and to frequent recurrence—though the immediate result is to soothe the patient, the final one is to prolong the disease. Gargles are objectionable, because they excite the inflamed organs to movements of a harmful character, and one can hardly hope that the transient contact of not very active fluids will have much influence upon the progress of the morbid process. The rational treatment will necessarily consist in attacking the constitutional elements of the disease, in combating them wherever they show themselves, and in destroying those which cause the most suffering, or which have the greatest influence in producing and maintaining the lesions of the disease. As in other diseases, therefore, we shall deal with the dominant and the variant. Chronic amygdalitis generally depends upon a morbid diathesis of some kind, and we ought, first of all, therefore, to aim at an alteration of the constitution, of such a character as shall affect the cause of the disease.

The herpetic diathesis should be treated with the arseniates of soda or iron, or with arsenious acid, six to ten granules being given daily; the syphilitic diathesis with the protiodide or biniodide of mercury; the rheumatic diathesis by the salicylates, by colchicine, or by iodoform, in doses of two granules, three or four times daily; the scrofulous diathesis by hygienic means and by mineral waters, by juglandine, iodoform, arseniate of soda, and arseniate of iron; the tuberculous diathesis, which usually depends upon a condition of leucocythæmia, by iodoform, arseniate of strychnine, and the ferruginous preparations.

The acute forms of angina, of parasitic origin, are all curable by means of the sulphide of calcium, and even the diphtheritic form may be included in the list of curable diseases, thanks to the labors of Fontaine. For these forms of disease the sulphide of calcium can not be dispensed with. It may be associated with brucine, if there is adynamia; with salicylate of quinine, if it occurs in periodical paroxysms; with aconitine, if the fever is very high; and with emetine, if the presence of false membranes renders suffocation imminent. Simple tonsilar or acute catarrhal angina is best treated, as a rule, with aconitine. Its action is often remarkable, not only in reducing the temperature, but in relieving local hyperæmia. The patient should be directed to allow the granules to dissolve slowly in the mouth, as the local effect upon the inflamed tonsils is thus increased. Thus, taken at as frequent intervals as is indicated by the temperature, these granules take the place of both leeches and gargles, and are without their inconveniences. If the fever is not sufficiently high to require aconitine, cocaine may be used instead, three granules being taken every hour or two, according to the indications.

Pain, which is often the first symptom, can be met satisfactorily with hyoscyamine, given in half-granule doses every quarter of an hour, until the desired effect upon the throat is produced. If the pain should not be present until after the fever has manifested itself, the aconitine or the cocaine will be sufficient to relieve it. Dryness of the throat will also be relieved by the aconitine or by the nitrate of pilocarpine, of which three granules may be given every half-hour. The gastric catarrh which often accompanies this disease may be treated with Sedlitz Chanteaud. After the inflammation has become established and exudation has occurred, the fever must still be treated with aconitine. During the remissions hydroferrocyanate of quinine may be given. Codeine, two granules every quarter of an hour, will relieve the nausea accompanying this disease; while the ptyalism should be treated with small doses of atropine, repeated until the desired effect is obtained. In the third period, when the inflammation terminates by suppuration—a termination which will rarely occur, however, if the treatment of the disease be begun within the first twenty-four hours of its history—the occurrence of chills will indicate the use of arseniate of quinine, one granule every hour, and adynamia will call for a liberal use of tonics, especially strychnine. After the patient has recovered, we should endeavor to prevent all predisposition to renewed attacks by the use of strychnine and cold baths, if the tendency is to simple angina; and by a prolonged antidiathetic system of treatment, if the tendency is due to a morbid constitutional condition. The foregoing observations will serve as a guide to the practitioner in the choice of suitable remedies for combating the different conditions which may arise in the course of this disease.

AMYGDALITIS.	DOMINANT.	Herpetic diathesis		Arseniate of soda or iron. Arsenious acid.
		Syphilitic diathesis		Protiodide of mercury. Biniodide of mercury.
		Rheumatic diathesis		Salicylate of quinine. Colchicine.
		Scrofulous diathesis		Arseniate of soda or iron. Iodoform.
		Tuberculous diathesis		Iodoform. Arseniate of strychnine.
		Parasitic infection (diphtheria, measles, erysipelas, variola, etc.)		Sulphide of calcium. Salicylate of quinine.
	VARIANT.	1st period: Congestion.	Pain	Hyoscyamine, cocaine.
			Dryness	Aconitine.
			Gastric catarrh	Sedlitz Chanteaud.
		2d period: Inflammation.	Fever	Aconitine, hydroferrocyanate of quinine.
			Nausea	Codeine.
			Ptyalism	Atropine.
		3d period: Suppuration.	Chills Adynamia	Arseniate of quinine. Arseniate of strychnine.

Anæmia.—Clinically, anæmia may be considered under three distinct and well-defined forms.

First, anæmia proper, in which the condition is due to the loss of a greater or smaller quantity of blood by hæmorrhage.

Second, *cachectic anæmia*, which is the result of the introduction into the blood of principles which are foreign to it, or of the insufficient elimination from it of substances which should be excreted. In both cases a modification in the composition of the blood, of the nature of a dyscrasia, is effected, and, consequently, a defective alimentation of the red globules.

Third, *essential anæmia*, or chlorosis, which is a disease of the red globules themselves, or of the organs which produce them.

Anæmia *proper* is quickly transformed into hydræmia. The cause being removed, the patient will get well spontaneously, in a longer or briefer period, according to the condition of the digestive functions, if he has offered successful resistance up to that point. Our aim should therefore be to preserve and excite the appetite, by stimulating the contractility of the intestinal tube by the use of quassine and strychnine, and facilitating digestion artificially, by the use of pepsin and diastase. With an active stomach and the use of proper food, the normal state of the blood will be readily re-established, and there will be no occasion for embarrassing the digestive functions by the administration of iron, which is contained in the food in sufficient quantity to meet the exigencies of the case. In cachectic anæmia the cause must be treated; the daily use of Sedlitz Chanteaud, as a diuretic and laxative, and of strychnine to sustain the vitality and excite the nutritive functions, will be found to be the most appropriate remedies.

Chlorosis, that form of anæmia which is so common at the present time, is usually treated with iron, but the utility of this means of treatment for such a condition remains to be proved. When we see that the curability of chlorosis depends much more upon the regular production of hæmotoblasts than upon the methodical administration of ferruginous preparations; when we observe that in those cases of chlorosis which are most pronounced the deficiency of iron in the blood is quite insignificant compared with the large quantities which are taken in with the food, and in pharmaceutical preparations; when we consider that hygienic means —cheerfulness, good air, sunshine, and cold water—are superior to preparations of iron for the treatment of chlorosis, we may be pardoned for having some doubt with respect to the specific virtue which is usually attributed to iron. It may happen, in chlorosis, either that the hæmatoblasts, after a time, are produced in sufficient quantity, or with a sufficient degree of vitality, to accomplish the regeneration of the blood-globules, in which case the disease is quickly cured; or, on the other hand, that the production of the hæmatoblasts is defective, the preparations of iron exercising no perceptible benefit, in which case the anæmia becomes pernicious, incurable, and rapidly fatal. Though therapeutics can not interfere directly in the production of the hæmatoblasts, it can render good service by its direct influence upon the general vitality, and upon the digestive functions in particular. In chlorosis the vital energy is profoundly depressed. All the functions are deficient in activity, on account of the languor and the sluggishness of the nerve-force. The muscular system does not escape this torpid condition, and gastro-intestinal inertia is manifested by the customary symptoms. The lesion of the digestive apparatus is the principal obstacle to the rapid cure of chlorosis, for, without perfect elaboration of the food, without its rapid and complete absorption, we can not hope for a general reconstruction of the system, which is indispensable to a proper reorganization of the blood. Herein the question as to the utility of iron becomes most pertinent. Its absorption is open to doubt; the larger portion, if not all of it, being recoverable from the fæces. By its astringent action, which is exercised throughout the entire surface of the digestive tract, and propagated by means of the centripetal nerves throughout the entire economy, we can readily explain not only the improvement in the working of the digestive apparatus which follows its use, but, in addition, the general tonic effect which follows its prolonged use. In the same manner, it is easily explained that iron has equivalent *succedanea* in hydrotherapy, strychnine, gymnastics, change of air, etc. The indication in chlorosis is, therefore, to stimulate to action. In addition to hygienic means, we may use iron, the astringents, and the bitters—strychnine, quassine, tannic acid, and quinine being preferred. The strychnine may be associated with iron, but the other three must not be so used on account of chemical incompatibilities. The dosimetric arsenal has several ferruginous preparations—the arseniate, phosphate, lactate, valerianate, and salicylate. All of them may be used, either singly or in combination, according to the indications of each case. The arseniate is suitable in most diseases; of all the salts of iron it is the most readily tolerated, and is least apt to give rise to constipation. It is appropriate in the most simple forms of chlorosis. Its combination with arsenic is very advantageous. Two or three granules may be given with each meal. The phosphate will be found serviceable in cases in which the nervous functions are much depressed. The lactate is indicated if the stomach is very irritable, with a tendency to gastralgia. The valerianate may be used in those forms of chlorosis which are complicated with neuralgia or other nervous troubles. If a rheumatic element is present, or there is tendency to rapid decomposition in the stomach, the salicylate may be used. The number of granules to be taken at each dose is the same, whichever salt be employed. As a rule, two of these salts are used in combination, their action being fortified by the use of the arseniate or the hypophosphite of strychnine, one or two granules, three times daily. If digestion is difficult, we should employ, in addition, three granules each of pepsin and of diastase with each meal. Such is the fundamental treatment of anæmia. As the symptoms vary, we shall be compelled to complicate the treatment. Palpitations, which occur so often among chlorotic individuals, and which frequently destroy the good effect of medication, on account of the moral troubles which have so depressing an action on the sick, should be promptly antagonized with digitaline. Gastralgia, whether it be spontaneous or produced by iron, should be treated with codeine, associated with hyoscyamine, three granules of the former and one of the latter being used, at the same time with the preparations of iron. If the pain is very severe, two granules of morphine, with one of sulphate of atropine, may be used every quarter of an hour until the pain ceases, or from three to ten granules of cocaine may be taken in the course of ten minutes. Headache and vertigo may occur, whether from congestion or cerebral anæmia. If due to the former, a granule of aconitine, given hourly, will relieve the congestion; if due to the latter, those means should be used which will restore to the brain the necessary blood-supply. Of these, caffeine, two granules every quarter of an hour, may be used; or bromide of camphor, or benzoate of ammonia, in similar doses; or two granules of Gregory's salt may be given every half-hour. For the more or less periodic neuralgias, which may be present from time to time, five granules of the valerianate of quinine, every half-hour, may be used, until the appearance or the want of appearance of the paroxysm. Irregular forms of neuralgia will be more appropriately treated by guaranine and gelsemine, two granules every quarter of an hour. Amenorrhœa should be met with iodoform, associated with arseniate of iron, three granules three times daily; menorrhagia by three granules of ergotine, one to three of sulphate of strychnine, and three granules of tannic acid, every half-hour, or oftener, according to the merits of the case. For constipation, three to five granules of podophyllin may be given every evening, or three granules of euonymine before each meal.

Dominant.	Anæmia proper		Quassine. Arseniate of strychnine. Pepsin and diastase.
	Cachectic anæmia		Sedlitz Chanteaud. Hypophosphite of strychnine.
	Essential anæmic chlorosis		Salts of iron (arseniate, phosphate, lactate, valerianate, salicylate). Tannic acid. Arseniate or hypophosphite of strychnine.
	Palpitations		Digitaline.
	Gastralgia		Codeine and hyoscyamine. Hydrobromate of morphine and sulphate of atropine; cocaine.
Variant.	Cephalalgia	Congestive	Aconitine.
		Anæmia	Gregory's salt, benzoate of ammonia, bromide of camphor.
	Neuralgia	Periodic	Valerianate or hydrobromate of quinine.
		Irregular	Gelsemine and guaranine.
	Constipation		Podophylline, euonymine.
	Amenorrhœa		Iodoform.
	Menorrhagia		Ergotine, tannic acid, sulphate of strychnine.

Cerebral Anæmia.—Cerebral anæmia results now from general anæmia, in which the brain participates, and again from a particular ischæmia of the brain, localized in that organ, without the other organs being affected. In both forms the *dominant* indication is the same—to increase the circulation of blood within the brain—but in the first form the primary cause must also be considered; otherwise, the results of treatment will be very transitory.

That is why the ferruginous preparations, and all other substances which are designed to improve the condition of the blood, should accompany and follow the use of the agents which are particularly indicated for this condition, and which constitute the treatment for the emergency. The active principles of opium, by virtue of their power of increasing the cerebral circulation, will satisfy the first indication. Our choice would be Gregory's salt or the hydrochlorate of morphine, two granules from two to five times daily, and in case of children a granule of codeine, three to five times daily. If the anæmia is general, we should give two granules of the arseniate of iron three times daily, combined with Gregory's salt. Among the symptoms of cerebral anæmia there are some which call for a particular line of treatment, not only because they are very inconvenient for the patient, but also because they continually threaten his very existence. Thus, we should antagonize vertigo with caffeine or its salts, two granules every half-hour. If the vertigo is very distressing, or is frequently repeated, syncope may be the result, which is not always without danger, and which will be likely to terrify the patient. When the repetition of these attacks of syncope has demonstrated the weakness of the heart and the decided depression of nervous force, we should give one to two granules of hypophosphite of strychnine every hour. Convulsions should be treated with two granules of the bromide of camphor every two hours, or two granules of the valerianate of quinine every hour. If there is headache, we should give two granules of quassine every half-hour. The nausea which usually accompanies vertigo may be treated with two granules of codeine every half-hour, or with two granules of quassine every hour in case the tongue is foul. Insomnia, which is one of the most distressing elements of this disease, should be treated with three granules of the hydrochlorate of morphine every quarter of an hour, or with the bromide of camphor in the same doses if for any reason it is not desirable to use the morphine. Narceine or croton chloral may be substituted for the other hypnotics should it seem desirable, the doses being the same as were prescribed for morphine. This treatment is almost always crowned with good results, unless the anæmia depends upon incurable organic lesions. The difficulty consists not so much in treating the anæmia as in differentiating that condition from congestion. The symptoms by which these two opposite conditions are manifested are really the same, and it is not by this means that we can establish a differential diagnosis. The general condition of the patient and the state of his vitality, as revealed by his pulse, are better signs than all the others. It is by these means that the physician ought to reach a decision, and that without delay, for the results will be good or bad according as the conclusion in each case shall conform or fail to conform to the facts. A substantial diet, with abstinence from all causes which produce debility, are appropriate in anæmia; a rigid diet is suitable in hyperæmia. The difference in the condition of the patient as the position of his body is changed is also an excellent means of differential distinction, but the differences are not always sufficiently appreciable, unfortunately, to constitute this a positive element of diagnosis. The physiological groping along, by means of medicaments as a touchstone, will also help the physician in finding the right course.

CEREBRAL ANÆMIA.	DOMINANT.	Anæmia	Arseniate of iron. Gregory's salt.
		Vertigo	Caffeine.
		Convulsions	Valerianate of quinine. Bromide of camphor.
		Cephalalgia	Guaranine.
	VARIANT.	Nausea	Codeine. Quassine.
		Syncope	Hypophosphite of strychnine.
		Insomnia	Hydrochlorate of morphine.

Angina Pectoris.—See Lesions of the Heart.

Angina, Pseudo-membranous.—See Diphtheritic Maladies, under M.

Apoplexy, Cerebral.—See Cerebral Hæmorrhage, under Hæmorrhage.

Apoplexy, Serous.—See Hydrocephalus.

Asthma.—Asthma has for its essential cause the abnormal excitability of the *vagi*, whence a spasmodic condition of the muscles which participate in the act of inspiration results. If the excitability of these nerves is very great, only a slight irritation is necessary to provoke a paroxysm of asthma; if, on the other hand, their excitability is only ordinary, a paroxysm will be caused only by a very decided irritation. It is very important to understand the causes which are at work in the latter case, for then it will suffice to suppress the determining cause of the paroxysm in order to control the predisposition to this disease, or, in other words, to keep it in a latent condition, which is equivalent to a cure; and this will facilitate the action of the therapeutic agents upon the nervous lesion, which is at the foundation of the disease.

M. Germain See classifies the causes of asthma in the following manner:

A. Paroxysms originating from irritation of motor nerves:

1. Impressions received from organic substances in the form of powder.
2. Action of vapors of certain kinds.
3. Influence of the atmosphere.

B. Paroxysms of reflex origin:
1. The stomach and intestines.
2. The uterus or its annexa.
3. The skin and the sensory nerves.
C. Paroxysms of central origin:
1. Moral emotions.
2. Medullary lesions.
D. Paroxysms of humoral or mixed origin:
1. Alteration of the blood.
2. Poisoning.
3. Constitutional faults.

Idiopathic asthma, which is the consequence of a dynamic lesion of the pneumogastric nerves, or of their bulbar center, is not so difficult to cure as is usually supposed. The spasmodic character of the disease requires for a dominant hyoscyamine or the analogous alkaloids, atropine and daturine. With a methodical and prolonged plan of treatment, the paroxysms will diminish in frequency and intensity, until finally they will cease altogether.

A distinction must be made between the treatment which is appropriate during the paroxysm and that which is appropriate during the intervals. The patient should avoid most carefully at all times all provoking causes which can stimulate the pneumogastric either directly or indirectly. In addition, we should combat the general condition of nervous excitability by the use of two granules of hyoscyamine twice daily, the number being gradually increased if, after a month of systematic treatment, no decided result is apparent. Should the asthma appear in a subject with the herpetic, rheumatic, or arthritic diathesis, the treatment should be of such a character as to modify the diathesis. For the herpetic diathesis we should use hyoscyamine or arsenious acid, six granules daily; for the arthritic and rheumatismal, four granules of colchicine daily. In all cases we should also give Sedlitz Chanteaud in the morning, and in the evening two to four granules each of aconitine and digitaline. During the paroxysm, whatever its cause may have been, the treatment should be entirely different. The latent excitability of the vagi becomes active and apparent, and results in a loss of equilibrium of nervous force, which is most evident in those muscles which are innervated by the pneumogastric, certain other muscles being in a condition of tetanus. Hence arise certain phenomena which are commonly observed in connection with this disease: whenever there is a development of dynamic force in one portion of the organism, there is, of necessity, inhibition in another, which is more or less closely related to the previous manifestation. To these two lesions we must oppose agents which will serve to ameliorate them, though their respective action may seem antagonistic. We should combat the spasm with one granule of hyoscyamine, atropine, or daturine, every quarter of an hour, or less frequently, according to the intensity of the spasm. Of the three alkaloids, hyoscyamine is the least active; daturine produces its effect the most rapidly, and the effect of atropine is intermediate. The action of the sulphate or the valerianate of atropine is much less intense than that of the alkaloid itself. Paralysis should be combated with the hydrochlorate or the hydrobromate of morphine, either alone or associated with the sulphate or arseniate of strychnine; three granules of morphine and one of strychnine may be given with each dose of hyoscyamine. Hypodermic injections of five to ten granules (in solution) of the hydrochlorate of morphine, with which one or two granules (in solution) of atropine should be associated, operate with great rapidity, and will produce a soothing effect upon the patient in a very few minutes. Since it is a matter of common observation that the diminution in the intensity of the paroxysm is associated with the secretion of a greater or smaller quantity of viscid mucus, we should endeavor to excite the activity of this secretion by the use of three granules of sulphide of calcium every half-hour, or by similar doses of iodoform. These two drugs tend not only to stimulate the secretion of the bronchial mucous membrane, but also to soothe the nerves which are distributed to the mucous membrane. Such is the ordinary treatment of these paroxysms, and ordinarily it is followed by the best results. It may occur, however, that the physiological effects of the drugs which have been prescribed will be apparent before their therapeutic ones, in which case their use must be suspended for the time; in such cases three granules of bromide of camphor might be used every quarter of an hour, or two granules of lobeline every half-hour. The action of the lobeline is a complicated one, for, by its narcotic action, it has a soothing effect upon respiratory perturbation, while, by its local irritant action, it directs to the stomach the nervous activity which is accumulated in the respiratory apparatus, and thus, in an indirect manner, calms the paroxysmal condition.

During the height of the paroxysm the pulse becomes precipitous, the lungs congested, and there may be a rapid development of temperature, reaching even 40° C. Under such circumstances, digitaline should be given to regulate the pulmonary circulation, and it should be associated with aconitine, one granule of each being given every hour, if the congestion is intense. Whatever be the importance of treatment during the paroxysm, we must not count too much upon its value, unless a continuous plan of treatment is associated with it, which shall aim at destroying the efficient cause of the disease. Unfortunately, in this as in all other chronic diseases which are characterized by acute paroxysms and long intervals of relief, the patient too often believes that he is cured if he goes for any considerable period of time without an attack, and relaxes his course of medication accordingly. The physician should insist, as a condition of treatment which is designed to effect a cure, upon a rigorous observance of all his directions for a sufficiently long time—that is, until the evidence is satisfactory that a radical cure had been accomplished. The dread of medicines, with which physicians of the regular school have inspired their patients, is the greatest obstacle in the way of obtaining good results from treatment for their patients. If physicians would see to it that empty medicine-bottles were thrown away, instead of accumulating and frightening their patients (on account of the quantity of medicine which has been consumed), the patients themselves would have more perseverance in following treatment than they are wont to show. In the treatment of chronic and rebellious diseases, in which there is no irremediable vital lesion, it may often be observed that the failure to effect a cure is due to this very want of perseverance, and in no disease is this statement better illustrated than in asthma.

ASTHMA.	DOMINANT.		Excitability of the pneumogastric	Hyoscyamine.
	VARIANT.	Causal.	Rheumatic diathesis	Colchicine.
			Herpetic diathesis	Sedlitz Chanteaud.
			Hæmorrhoidal, hepatic congestions, etc.	Sedlitz Chanteaud. Aconitine.
			Other influences	Suppression of the cause.
		Symptomatic.	Gastro-intestinal aura	Lobeline.
			Spasm in inspiration	Atropine, daturine, morphine, arseniate of strychnine, bromide of camphor.
			Catarrhal secretion	Sulphide of calcium, iodoform, scillitine.
			Cardiac perturbations	Digitaline.
			Congested condition	Aconitine.
			Periodicity of the paroxysms	Hydrobromate of quinine.

Asystolie (*or Asystolia*).—See Cardiectasis.

Athrepsis.—See Pultaceous Stomatitis (under Stomatitis).

Balanitis.—Balanitis is caused by inflammation of the *glans penis*, or of the preputial mucous membrane, a muco-purulent material being secreted, the fetid character and deleterious action of which depend upon the length of time that it is retained between the glans and the inner surface of the prepuce. Its principal causes are want of cleanliness of the penis, frequent erections and coitus, and syphilitic or herpetic ulcerations. This disease is usually benign in character, but it is less so the greater the difficulty in disposing of the products of secretion. If the glans is ordinarily covered by the prepuce, and the orifice of the latter is small, the superadded inflammatory swelling will almost entirely prevent the exit of the smegma and the products of inflammation. The contact of the urine aggravates the condition, and may readily assist in the development of phimosis, paraphimosis, or even gangrene of the glans. The indications depend, of course, upon the condition or stage of the disease. For the inflammation itself we should use aconitine; as a curative as well as preventive means to the decomposition of the mucopurulent secretion we should use astringent and antiseptic washes and injections. As the condition is sometimes complicated by spasm, we should also use hyoscyamine. The *pruritus*, which often accompanies diseased conditions of the glans penis and frequently excites masturbation, may be treated by cicutine and local emollient applications. The quantity of aconitine given must be governed by the intensity of the inflammation. One granule every two hours will usually have the desired antiphlogistic effect. For lotions and washes, decoction of mallows or simple warm water may be used; sulphate of zinc, with or without resorcin, will furnish the basis for a satisfactory injection material. The following formula is recommended:

℞ Aquæ........................	200	grammes.
Resorcinæ.....................	2	"
Zinci sulphatis................	1	gramme.

Should there be a condition of local spasm, one granule of hyoscyamine may be taken every two hours. For pruritus, one granule of cicutine may be used every two hours, or oftener if necessary. Balanitis of syphilitic origin should be treated with iodide of mercury internally, and locally by injections of sublimate. Herpetic balanitis may be treated by two granules of the arseniate of soda, and two of veratrine, three to five times daily, and by the topical use of emollients.

BALANITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Herpes	Arseniate of soda, veratrine.
		Syphilis	Protiodide of mercury.
		Pruritus	Cicutine.
		Spasm	Hyoscyamine.
		Fetid secretions	Local use of antiseptics.

Beri-Beri.—This disease is principally seen in tropical countries, and in this work it is referred to chiefly on account of its prevalence in Brazil.*

The symptomatology and etiology of this disease lead us to believe that it is caused by a parasite which attacks principally the spinal cord. The existence of these specific (?) microbes appears to end with a change of climate on the part of the patient, and only the consequences of their existence remain, the persistence of which appears to be due to the destruction of certain nerve-cells, which appear to be completely regenerated after a certain length of time and suitable treatment, and all the functions are re-established as at the first. The dominant in the treatment will consist, then, in the use of strychnine to restore the structure and the function of the nerve-cells.

Among the salts of strychnine, a hypophosphite is to be preferred for this disease, two granules being given three or four times daily. The anæmic condition, which is almost always observed in these cases, calls for two to three granules of arseniate or the phosphate of iron with each meal, The accompanying œdema and palpitations will disappear more rapidly if the heart is strengthened by the use of caffeine and digitaline; three granules of the caffeine may be given with one of digitaline, three to four times daily. The paralyses have already been treated by the dominant, and this treatment may be re-enforced by means of two granules of phosphoric acid, three times daily. Two to three granules of podophyllin may be given at night for constipation. Two granules each of cicutine and of croton chloral are indicated every hour, until a decided effect is produced, if the patient is troubled by intense or frequent neuralgias. The sense of occlusion or of constriction in the middle of the body, which sometimes occurs, should be treated by the same means. Hydrotherapy, and especially sea-baths, are almost indispensable if we wish to effect a rapid cure. The digestive troubles call for very attentive treatment, for upon the perfection of assimilation depends the ready regeneration of the anatomical elements which have been attacked or destroyed. We should, therefore, give quassine or brucine, two granules before each meal. Some authors consider this disease as a particular manifestation of paludal infection. It will be proper, therefore, if the cases appear rebellious to treatment, and a change of climate does not effect satisfactory amelioration, to insist upon the use of two granules of the hydroferrocyanate or the arseniate of quinine, three to six times daily.

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* It is to be borne in mind that this work was originally written in Portuguese.—TR.

BERI-BERI.	DOMINANT.	Miasmatic infection .	Arseniate or hydroferrocyanate of quinine.
		Medullary lesions .	Hypophosphite of strychnine.
	VARIANT.	Digestive troubles .	Quassine, brucine.
		Paralysis . . .	Strychnine, phosphoric acid.
		Œdema . . .	Caffeine, digitaline.
		Anæmia . . .	Arseniate of iron.
		Constipation . .	Podophyllin.
		Neuralgia . . .	Cicutine, croton chloral.

Blennorrhagia.—See Urethritis.

Bronchitis.—This is one of the most common diseases, which is not only met in the daily work of the physician, but also occurs in numberless cases in which it follows the natural course, and is recovered from without medical attention, and often without regard for the simplest rules of hygiene. In spite of the frequency of the disease, a sure remedy, which shall be prompt in its action, remains to be discovered. Each year some new formula is recommended, based upon the experience of some distinguished physician, which may be used in almost any case which may present itself, whatever its intensity. The care of the patients is regulated by custom, even to the cut of their clothing. Each autumn a new invention is launched upon the market, which will serve as a *positive cure* for the catarrhal complications of the disease. It may be said that there is no disease which varies to the same extent as bronchitis in its types, its forms, its course, and its duration. While it is almost always benign, it is, notwithstanding, one which gives the physician great trouble, especially in regard to obtaining from the patient knowledge which shall serve as a basis for intelligent treatment. Notwithstanding the fact that bronchitis is benignant, as a rule, nothing is more important than that it should be checked at its beginning; for, while it is usually a simple bronchitis at first, it may not be a bronchitis at all at the end—that is to say, from bronchitis are often developed pleurisy, pneumonia, and tuberculosis, either of which may terminate fatally. Acute bronchitis rarely begins as such; it usually follows coryza, laryngitis, or tracheitis. It is, therefore, plain that, if we were to check these preliminary forms of disease while they are still localized, we would avoid their more or less serious consequences. To treat a case of bronchitis successfully, it is indispensable that we determine with precision all the elements of which it is composed, and then attack the more important of them with the greater activity, remembering that there is, as yet, no absolute specific for the disease. In order to facilitate the study of this subject, acute bronchitis may be divided into two forms, the simple and that which is complicated with a diathetic element. The first is an inflammation of the mucous membrane which lines the respiratory passages; the second is the first modified by the apparent or latent dyscrasia. Simple bronchitis is purely a local inflammation in the part or organ inflamed, and should be checked by defervescent means. Its effect is not always local, however, and the irritation to the nervous system, and disturbance to nutrition, may be so decided as to nullify, wholly or in part, the action of the defervescents. In such cases, those agents which have a calmative effect upon the nervous system may, of themselves, be sufficient to check the disease, because they check the morbid element, which was originally secondary, but has now become the principal one. At the beginning of attacks of coryza, tracheitis, laryngitis, and simple bronchitis, two principal elements are to be antagonized—the inflammation by aconitine, and the cough by morphine. According as one or the other of these elements predominates, we should push one or the other remedy. If the fever is high and the cough is not very troublesome, we should give aconitine every quarter of an hour until free diaphoresis is established. It may be combined with digitaline if the pulse is rapid. If the cough is continual, severe, and fatiguing, it will not fail to tend to increase the inflammation if we do not take active measures to arrest it. Such means may consist in the use of the hydrochlorate or hydrobromate of morphine with aconitine, of which two granules may be allowed to dissolve in the mouth every quarter of an hour until a decided effect is produced. To children it is better to give veratrine and codeine for this disease, the veratrine being suspended if it will not be tolerated by the stomach, and replaced, should the fever continue, by very small doses of aconitine, a half, a third, or a quarter of a granule being used, according to the age of the patient, the intensity of the fever, and the result which is obtained. If the first or acute stage is over, there is what is called a catarrhal condition, which is characterized by a secretion of mucus, and this varies greatly as to quantity, viscidity, and facility of excretion. This secretion almost always excites cough, and its intensity is not always proportional to the abundance of the secretion. It should always be ascertained whether the efforts to expectorate are proportional to the necessity of relieving the bronchi of their accumulations; for, while it is not desirable that the bronchi should be clogged by these accumulations, it is equally undesirable that the patient should become exhausted by efforts to get rid of them. The cough may reach a stage of great exaggeration, either on account of the viscosity of the sputa, the bronchial spasm which prevents their discharge, the want of sufficient muscular energy to expel them, or an excessive degree of nervous irritability which excites intense reflex movements. To counteract the viscidity of the sputa, we should give two to three granules of scillitine, or a granule of arseniate of antimony every two hours, or a granule of emetic every four hours. For the spasm a granule of sulphate of atropine may be given every three hours, or two to three granules of bromide of camphor every hour. The antispasmodic, calmative, and mildly stimulating properties of the last-mentioned drug upon the respiratory mucous membrane are very useful in all forms of bronchitis, whether acute or chronic. The paralysis of the bronchial muscles, which is of infrequent occurrence in acute cases, may be effectively opposed by the hypophosphite of strychnine. Exaggerated irritability may be readily quieted by Gregory's salt, narceine, the salts of morphine, iodoform, or croton chloral. When, toward the end of the disease, the mucous secretion becomes fluid, we should use agents which are stimulants to the mucous membrane—for example, eight to twelve granules of the benzoate of ammonia daily, six to ten granules of sulphide of calcium, eight to twelve granules of cubebine or piperine. The association of morphine and atropine is also very useful in the last stages of acute bronchitis, as well as in the chronic form of the disease, on account of the modifications which it produces in the pulmonary circulation. Two granules of morphine and one of atropine, or of sulphate of atropine, may be used three or four times daily. Emetine and apomorphine are also of service in the bronchitis of children, who are very susceptible to pulmonary collapse, especially after the abuse of antimonials or their congeners. If the bronchitis is under the influence of a diathetic element, its treatment should not differ materially from the foregoing. The arthritic diathesis is the one which is most frequently concerned in rebellious cases of bronchitis; we should use colchicine in cases of such a character, associated with aconitine, for their defervescent action; the hydriodate of morphine to quiet the cough, and the benzoate of lithia or of soda as a stimulant. The scrofulous diathesis requires incitants rather than defervescents—for example, iodoform, phosphate of iron, quassine, strychnine, and juglandine. The tuberculous diathesis, which gives rise to the most rebellious forms of bronchitis, calls for the repeated use of mild revulsives, together with the vigorous use of defervescents. The herpetic diathesis requires the arseniates, or arsenious acid and veratrine. It is unnecessary to add that hygienic precautions should be rigorously enforced. If they can not effect a cure, they may ward off exacerbations which will neutralize the best-arranged plan of treatment. Hygiene is preventive, therapeutics is curative.

BRONCHITIS.	Simple.	DOMINANT.	Inflammatory element	Aconitine.
		VARIANT.	Fever	Aconitine, veratrine, digitaline.
			Febrile intermittence .	Hydrobromate of quinine.
			Nervous irritation .	Hydrochlorate of morphine.
			Cough	Gregory's salt, narceine.
			Bronchial spasm . .	Bromide of camphor, sulphate of atropine.
			Viscid secretions . .	Scillitine, emetic, arseniate of antimony.
			Fluid expectoration .	Benzoate of ammonia, sulphide of calcium.
	Diathetic.	DOMINANT.	Arthritic . . .	Colchicine, benzoate of lithia.
			Scrofulous . . .	Iodoform, iron, quassine, strychnine.
			Tuberculous . .	Iodoform, revulsives.
			Herpetic . . .	Arseniates of quinine and soda, arsenious acid, veratrine.

Capillary Bronchitis.—Capillary bronchitis is one of the gravest diseases that attacks children. Though this may be considered a catarrhal affection, the primary lesion is superseded by secondary ones which are caused by it. The feeble contractile power of the bronchi becomes the predominant morbid factor, which must be taken into account in treating the disease, for it is the principal cause of its mortality. Therefore, the neurosthenic agents should be used in preference to the anti-catarrhal; brucine or strychnine will, therefore, become the dominant medicament, as long as the capillary obstruction lasts, in doses of one granule every hour for children over two years of age. After the permeability of the respiratory tract has been restored, we can give two granules of the sulphide of calcium every two hours to overcome the catarrhal secretion. Helenine will fill the same indication, one granule being given every three hours. Though the temperature in this disease is not apt to be very high, nevertheless it tends to increase the dyspnœa and the vital prostration. It may be treated with veratrine, the mildly emetic and expectorant powers of which are quite appropriate for diseases of the respiratory apparatus in children. One to two granules in solution may be given every hour until vomiting or defervescence is accomplished. After having produced a moderation of the fever, we should give the hydroferrocyanate of quinine to overcome the intermittent character of the fever, which is more or less pronounced in all diseases of a catarrhal character. One to three granules may be given every two hours. A dry and harassing cough results from the adhesion of the sputa to the mucous membrane. For this condition expectorants are indicated, particularly the benzoates of soda and ammonia and scillitine. Two granules may be given every two hours. But, if the spells of coughing are very frequent and fatiguing, several doses of codeine should be given, in quantity one to three granules every hour, until a calmative effect is produced. The dyspnœa will continue as long as the obstruction in the bronchial tubes exists. In cases in which suffocation seems imminent, an emetic must be given to effect the expulsion of the collections in the tubes. Three granules of emetine in solution may be used for this purpose every ten minutes, until an effect is produced. A beneficial result may thus be rapidly produced, but we must not be deceived by it, for it may be only for the moment. The improvement with respect to the dyspnœa may be compensated by the greatest depression of the physical forces—that is, the patient may rapidly get worse; unless the indication is very urgent, therefore, we must refrain from using violent emetics, and instead use apomorphine in doses of two granules every two hours. In addition to its incisive properties (in the matter of separating the deposits of mucus), it is also a tonic to the respiratory apparatus, and thus comes to the relief of the dominant. The antimonials (kermes, emetic, and arseniate of antimony) should be held in reserve for the purely catarrhal period. They are too depressing in their action to be used while the pulmonary alveoli are threatened with collapse. Small flying blisters may be of service to stimulate both the local and general vitality, and to overcome pulmonary œdema, which threatens to complicate the situation; they should not be so large as to confine the field of respiration, nor restrain thoracic dilatation. The effect of vesicants in this disease is dynamic rather than physical, and therefore small ones frequently repeated are preferable to large ones, which can not be renewed very often. The convalescent stage should be watched with great care. Relapses occur very readily, and are the more frequent as the patient is more prostrated. We should not neglect to use all possible hygienic means of precaution in helping the patient through this stage of reparation. Two granules of quassine may be given with each meal to stimulate digestive action, and two granules of the arseniate or sulphate of strychnine, two to four times daily, to increase the vital resistance.

CAPILLARY BRONCHITIS.	DOMINANT.	Vaso-motor paralysis	Brućine.
	VARIANT.	Catarrhal secretion .	Sulphide of calcium.
		Fever . . .	Hydroferrocyanate of quinine, veratrine.
		Cough . . .	Benzoates, codeine.
		Dyspnœa . . .	Apomorphine.
		Asphyxia . . .	Emetine, veratrine.
		Convalescence . .	Quassine, strychnine.

Bronchorrhagia.—See Broncho-pulmonary Hæmorrhages (under *Hæmorrhages*).

Bubo.—See Syphilis.

Cancer of the Stomach.—Though this disease is incurable, the physician should not altogether abandon the patient to his fate. Not only should he use palliative means to soothe the pain and prolong the life of the patient, but he should seek for a curative treatment if only by eliminating in succession those medical substances which might by chance be useful. It is not absolutely essential that the treatment of incurable diseases should be forced in the expectation of producing positive results, for even negative results have their value, and by the systematic elimination of those means which have been tried and found unsuccessful the proper agent may some day appear, if it exists. Hydrastine has been recently tried by the author in doses of twelve to fifteen granules daily, divided into three equal parts. The conditions of experimentation have been varied, and in all cases this substance appears to delay the fatal issue. The dose may be increased without danger to the patient, and the subject is worthy of further investigation. Arseniate of soda, combined with iodoform by modifying the nutrition, may also be used with advantage. The principal medication must, therefore, be symptomatic in character. The pain of the disease may be relieved by cicutine, the dosage being varied in accordance with the severity of the case. If the pain is intense, two granules may be given every half-hour; if less severe, three granules may be given before each meal. The vomiting may be relieved with one granule of valerianate of atropine, combined with three of the hydrobromate of morphine, if the vomiting is the result of irritation; if, on the other hand, it is due to a catarrhal condition of the stomach, three granules of quassine may be given before each meal with Sedlitz Chanteaud. Difficulty in digestion may be diminished by using three granules of pepsin with each meal. Diarrhœa, resulting from imperfectly digested proteid elements of food, and from the septic products of the ulcerating process, should be treated with the salicylates or iodoform, two granules of each three or four times daily. The anæmia which results from the combined effect of the cancerous disease and dyspepsia may be treated with the salicylate of iron, two or three granules being given with each meal. The hectic fever, which tends greatly to weaken the patient and to shorten his life, may be treated with ten granules of the salicylate of quinine three or four times daily. Dropsy in this disease indicates that the fatal end is near. When it supervenes, we should give sulphate of strychnine, which, though it may not cure it, will at least stimulate the forces of the organism and retard the effusion of serum as the degeneration progresses. The most appropriate form of diet will be the milk-diet; not only because it will diminish the sufferings of the patient, but because it will also have a curative action in those cases which have been wrongly diagnosticated as cancer. After the cancerous tumor has produced stenosis either at the cardiac or the pyloric end of the stomach, it will be useless to insist upon attempting to feed the patient by the stomach. Enemata of peptonized food will sustain the patient better, and will not cause the pain which is produced if food is taken into the stomach.

CANCER OF THE STOMACH.	DOMINANT.	Cancerous dystrophy	Hydrastine.
	VARIANT.	Pain	Cicutine.
		Vomiting	Morphine, atropine.
		Anæmia	Salicylate of iron.
		Diarrhœa	Salicylates, iodoform.
		Fever	Salicylate of quinine.
		Dropsy	Sulphate of strychnine.

Cardiectasis (*Asystole*, *Dilatation of the Heart*).—The distention of cavities which are bounded by muscular walls always produces a more or less accentuated condition of paresis, which constantly tends to aggravation with the correlative exaggeration of this distention. Obstacles, of whatever character, to the propulsion of the blood by the cardiac systole, lead to an accumulation of blood in the heart-cavities, which thus become dilated, and the walls become thinned. The contractile force becomes less energetic at every point, its impulse more feeble, and the evacuation of the cavities more and more incomplete. As long as this difficulty is not compensated by hypertrophy, the vicious circle continues, and the functional perturbations increase in gravity. Cardiectasis may also arise from primary lesions of the heart-muscle, which give rise to the same train of consequences. If hypertrophy occurs, it delays, but does not obviate, the fatal consequences of the failure of mechanical equilibrium.

The fundamental lesion in cardiectasis consists in a weakness in the contractile force of the heart. The use of ergotine and sulphate of strychnine, two of the most reliable agents for preserving and increasing the muscular force, will, therefore, constitute the dominant. The doses will vary with the pathological effect of the primary lesions. If the perturbations are scarcely perceptible to the patient, three granules of each, three to five times daily, will be sufficient; but, if asystole becomes imminent, four granules of each must be given every half-hour until a positive result is obtained. Œdema in these cases is due to venous stasis, and consequently it is only when the heart regains its energy that the œdema disappears. For this condition we may give two granules of the hypophosphite of strychnine three to five times daily, together with two teaspoonfuls of the Sedlitz Chanteaud daily for a diuretic and laxative. Weakness and irregularity of the pulse call for the use of digitaline; as soon, however, as the physiological effect of this drug has been accomplished, we should associate with it the arseniate of strychnine. Vertigo, which results from cerebral ischemia, may be relieved by the use of caffeine or by Gregory's salt, two granules being given every half-hour until the desired effect is obtained. Lipothymia calls for the stimulating action of phosphoric acid, two granules every ten minutes until relief is obtained. Pulmonary congestion in this disease is sometimes accompanied by rupture of the vessels. This pneumorrhagia should be treated with three granules of ergotine every quarter of an hour, and with one granule of digitaline every half-hour if the pulse is weak and irregular. Congestion will also be benefited by two granules of the sulphate of strychnine every half-hour or hour. If the cough and dyspnœa do not yield to the dominant, one may give three granules of the hydrobromate of morphine every half-hour. Palpitations are the evidence of the unsuccessful efforts which the heart is making to relieve itself of the excess of its contents. The resulting atony of the cardiac movements may be regulated by two granules each, of arseniate of strychnine and digitaline, two to three times daily. Cardiac cachexia is a symptom of grave import, for it shows that it is no longer the heart alone whose energy is depressed, but that the entire organism is compromised by the insufficiency of the pulmonary circulation, which causes difficulty in the passage of the blood, and a condition which may not be easily modified. The general nutrition in these cases is much debilitated, which calls for the use of agents which will modify the blood and the general innervation. The arseniates of iron, strychnine, and antimony may be combined in this attempt to prolong life. If the dilatation is not excessive, life may be prolonged and asystole delayed by the use of cardiac tonics and a well-regulated hygiene which should prevent any violent disturbance of the equilibrium of the forces, which at such a time is so delicately poised. This end may be obtained by the use of two or three granules of strychnine and of digitaline every evening, and continued for a long time. The digitaline may be replaced from time to time by caffeine or guaranine, three to five granules every evening. The daily use of Sedlitz, physical and moral repose, regularity as to the gastro-intestinal functions, abstinence from coitus and from all stimulants, will be found useful in delaying the ultimately fatal issue of cardiectasis.

CARDIECTASIS.	DOMINANT.	Diminution of contractility	Ergotine, strychnine.
	VARIANT.	Œdema	Hypophosphite of strychnine.
		Weakness of the pulse .	Digitaline.
		Vertigo	Caffeine, Gregory's salt.
		Lipothymia . . .	Phosphoric acid.
		Pneumorrhagia . .	Ergotine.
		Congestion . . .	Sulphate of strychnine, digitaline.
		Cough, dyspnœa . .	Hydrochlorate of morphine.
		Palpitations . . .	Arseniate of strychnine, digitaline.
		Cardiac cachexia . .	Arseniates of iron and strychnine.

Catalepsy.—This curious disease furnishes one of the most remarkable examples of dynamic affections. Its sudden appearance and disappearance, the profound disturbance which it causes in the most important functions, the latter showing nothing abnormal after the attack has passed away, all seem to demonstrate that this disease consists merely in a transposition of forces which have left the brain and accumulated in the spinal cord. It furnishes the clearest confirmation of the theory of inhibition and dynamic influence—inhibition on the part of the cerebral functions; dynamic influence with reference to muscular tonicity. The brain thinks less, the will is abolished, but, as a compensation, the function which determines stability becomes exaggerated. Catalepsy, therefore, consists of two principal dynamic lesions—inertia of the brain and spasm of the cord. Treatment must, therefore, be regulated in accordance with this morbid duality, and the pathogenesis of the condition justifies that form of treatment which associates drugs which have more or less antagonistic features as to their physiological action. In this, as in all diseases in which there is a want of vital equilibrium, we must use hyoscyamine and strychnine combined. Each drug directs its action to a particular perturbation, and the disease, thus combated in its two principal manifestations, will yield with more certainty and promptness than by any other method. In the intervals between the attacks we should, therefore, give one granule of each drug three or four times daily. During the attack there is little that can be done except to seek to re-establish the equilibrium by acting upon the functions which still remain unaffected. One method which is worthy of trial consists in the subcutaneous injection of apomorphine, in doses of one hundredth of a grain. Injections of atropine may also be tried. Habitual masturbation, which is one of the most frequent causes of catalepsy, may be treated with three granules of the bromide of camphor morning and evening. Anæmia and debility are predisposing causes to this condition, and may be treated with two granules each of the arseniate and valerianate of iron at each meal. The nervous irritability, which is especially noticeable among those who suffer with hysteria and other neuropathies, may be treated with three granules of the phosphide or valerianate of zinc three times daily. The element of periodicity, which is often a prominent one in this disease, will call for the use of three to five granules of the valerianate of zinc three times daily. This treatment must be kept up for a long period, as it is evidently impossible to restore the nervous system to its normal condition in any brief period.

CATALEPSY.	DOMINANT.	Want of nervous equilibrium	Hyoscyamine, arseniate of strychnine.
	VARIANT.	Masturbation	Bromide of camphor.
		Anæmia	Arseniate and valerianate of iron.
		Instability of the nervous system	Phosphide of zinc.
		Periodicity	Valerianate of quinine.

Catarrh, Epidemic (*Grippe*).—This disease, which was at one time as deadly as the cholera, appears to be due to the development of parasites or miasmatic influences, which are manifested only in connection with certain variations of the atmosphere. The symptoms indicate a toxic condition, and the course of the fever shows that the morbific influence has more or less of an analogy with paludal miasm. The excellent results which have been obtained by quinine confirm this theory, and indicate the alkaloid of cinchona as the true remedy for the dominant. We may use with advantage the hydroferrocyanate of quinine, the antiperiodic action of which has been well proved, and which will also soothe the accompanying irritation of the respiratory passages better than the derivatives of opium. The headache, often intolerable, which accompanies the invasion of the disease, and which, in connection with redness of the conjunctiva, photophobia, and ringing in the ear, shows that there is active congestion within the cranium, may be readily controlled by aconitine, which will also moderate the febrile condition and the excitement of the circulation. One granule may be given every quarter of an hour, or less frequently, as the case may demand.

In other cases the most pronounced effects of this disease are manifested in connection with the digestive apparatus, the patient being troubled with nausea, vomiting, diarrhœa, etc. For this variety we should give Sedlitz Chanteaud to produce a prompt elimination of the exciting causes of the disease, and to free the intestine of the contents which are undergoing fermentation. The vomiting and diarrhœa may be checked by the use of two to three granules of hydrochlorate of morphine every hour, or of brucine in the same quantity if the morphine can not be tolerated. The thoracic variety of this disease presents the form of an acute bronchitis, though the accompanying cough is of a drier character than obtains in simple bronchitis. The sulphide of calcium is indicated as a means of treatment, three granules being required every hour, associated with a like quantity of codeine, until a soothing effect has been obtained. The accompanying broncho-pulmonary congestion demands a granule of digitaline every hour until the cardiac action is regulated. The prostration which attends or follows the disease should be met by the arseniate of strychnine. With old and very feeble persons we should remember the difficulty in obtaining complete resolution of the inflammation of the respiratory passage, and anticipate such an accident by the use of hypophosphite of strychnine. One to two granules of this may be given every two hours until all danger is past. Apomorphine may also be of service at this juncture as a tonic to the lungs, and to facilitate expectoration, two granules being given every two hours. The anorexia, which often retards convalescence after the disease has disappeared, may be treated with one granule of quassine and one of arseniate of soda four to six times daily. Whatever the medicament which is imposed by the variant, we should always associate with it the dominant until the beginning of convalescence. It is only by this plan that we shall be enabled to obtain positive profit from the symptomatic method of medication. All the morbid elements in this disease must be carefully recognized and treated, but the paludal element requires especial attention. This is essentially the characteristic of the disease; therefore, if we omit the use of quinine in our plan of treatment, all the other medicaments may prove futile. In severe and acute cases, in which it is desirable to have an uncomplicated plan of treatment, the accessory indications must be neglected, and all our attention be paid to the fundamental one. In some cases we will be compelled to give the hydroferrocyanate of quinine every quarter of an hour, perhaps for a long time, and it may be to the exclusion of all other remedies. The great difficulty is not so much in recognizing the indications, and the proper remedies for them, as in making a selection of the morbid elements which require especial attention.

EPIDEMIC CATARRH.	DOMINANT.	Miasmatic infection	Hydroferrocyanate of quinine.
	VARIANT.	Cephalalgia	Aconitine.
		Nausea and vomiting	Sedlitz Chanteaud, brucine.
		Diarrhœa	Sedlitz Chanteaud, hydrochlorate of morphine.
		Cough	Sulphide of calcium, codeine.
		Broncho-pulmonary congestion	Digitaline.
		Prostration	Arseniate of strychnine.
		Anorexia	Quassine, arseniate of soda.

Chancre (*Infecting or Hard*).—See under Syphilis.

Chancre (*Simple or Soft*).—See under Syphilis.

Cholera Morbus.—The value of science is properly understood only at those critical periods when either the individual or the community demands a remedy, effective in its results and rapid in its action, for the plague which threatens its very existence. Then the assistance of medicine and hygiene is earnestly besought, and their advice is willingly heeded; then alone does the state deplore the fact that the public sanitary service is so poorly organized and provided for. Until such a calamity either threatens or actually is present, and the existence and fortune of both governed and governors are in danger, means for the development and perfection of scientific ends are doled out from the public purse only in the most niggardly manner. Funds enough are always available for monuments and theatres, for pomp and display, but to aid learning, to endow schools, to stimulate a love for scientific research by honorable prizes and emulation for grand discoveries, not a cent.

When the pestilence or the cholera, leaving the marshy shores of the Ganges, glides across the Indies, stretching one arm toward Turkey and the other toward Egypt, and then reaches Western Europe; when it penetrates its cities, crowded with marble palaces as well as decaying ruins, making them the centers for its devastating excursions, then kings hide themselves, and the people fly in confusion, like madmen at a conflagation, ready to destroy whatever obstructs their path. Then the academies convene and the doctors discuss. The rulers consult this oracle, and the response is one which excites the derision of the world. These learned men guard against the discovery of a remedy; they hesitate to recommend proper means for the prevention of the plague; instead, they present us with a microbe, and give it a name which is soon familiar to all. In olden times the people demanded *panem et circenses* (food and public games); now they are satisfied with an empty process of reasoning, or a *bon mot* carelessly repeated. At such a time one sees the almost impotent condition of science, and then, when controlled by fear, we are promised by the *powers that be* those reforms which prudence long ago suggested. But this is only the illusion of the moment, for, when the public peril has disappeared, hygiene is again disregarded, therapeutics is unheeded, and science is more completely ignored than ever. What is the true cause of cholera? *

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* Dr. Besnier, well known on account of his epidemiological investigations, made the following declaration to the Academy of Medicine of Paris at the session of July 29, 1884: "It seems that the discoveries of clinical medicine and of chemistry have given us nothing that is certain; we can not yet distinguish during life, nor after death, a case of ordinary cholera from a case of Asiatic cholera; we are still ignorant of the nature of the agent which produces it, its exact method of introduction into the system, the portion of the organism which is first affected, the method and the time in which evolution of the morbid germ occurs in individuals and in objects—in a word, the differences of opinion upon these points are more accentuated than ever." ("Gaz. heb. de Méd. et de Chir.," August 1, 1884, p. 517.)

The positive notion in regard to the efficient cause or causes of diseases is, without any doubt, the basis of pathogenesis, prophylaxis, and therapeutics. It is for that reason that investigators search so earnestly in cadavers, in excretions, and in etiological factors, for the cause of material lesions and functional disturbances. No one doubts at the present time that cholera is a zymotic affection, a disease produced by the intolerance of the organism for parasites, probably of vegetable origin, which attack it and disturb its functions, whether from the elements which they take away from it, or the toxic elements of secretion or decomposition which they give up to it (on the latter hypothesis they are comparable to the cadaveric ptomaines or alkaloids), or from the irritation which they cause, as foreign bodies, in the living tissues.* This explanation, though hypothetical, is the only one which harmonizes all the facts and circumstances in overwhelming epidemics, such as attend the presence of cholera. Cholera, then, is due to a microbe which is endemic in India, is propagated through great distances, and is transported by individuals, by objects, or by the atmosphere alone. The transportation of the germs of cholera by the atmosphere is proved by the influence of all epidemics at a great distance from the foci of infection, by the effects which are produced in *all* the individuals in the contaminated localities, by the want of any other explanation for certain well-established facts in which the means of contagion can not be discovered, and by the discovery of germs and other microbes which float in the atmosphere. It has been observed that whenever Europe has been visited by an epidemic of cholera, the epidemic has always been preceded by an affection of the digestive tract, which has an entirely different clinical physiognomy from that which is usually presented by such troubles; that whenever the epidemic has become established at a given point there is evident, not only in contiguous localities, but in those which are remote, the influence of a morbific agent which produces sporadic cholera, cholerine, and other diseases which are but the shadow of the epidemic itself; and this in spite of great differences in climate and atmospheric condition. All these diseases have a resemblance, more or less definite, to true cholera. In those localities in which the disease (cholera) appears in all its intensity, though all the inhabitants may not be actually attacked, they all are influenced to a greater or less extent by the disease. Even those who are, to all appearances, in the best of health, show a diminution in the rate of the heart's action. This fact is now explained with more of clearness and reason than formerly, by the presence of microbes in the atmosphere. If, therefore, it is proved that there are germs in suspension in the atmosphere which circulates around the foci of infection, we must admit that aërial currents transport them from great distances, disseminate them, dilute and attenuate them more and more as the distance from their source increases. From the foregoing it follows that a single microbe may not, necessarily, suffice to produce the disease. The effects of that agency, like those of all other agencies, depend on the one hand upon the energy and number of the elements (microbes), and on the other upon the receptivity of the patient. The question is simply one of dose and of tolerance. In the centers of infection, where the germs are very numerous and very active, many individuals are attacked, and the attacks are overwhelming, severe, or mild, according to the resultant of the two factors. In a circle of territory with a radius of greater or less extent we will find, beyond the cholera zone, one in which cholerine and sporadic cholera prevail; beyond this, one in which indigestion and diarrhœa are prevalent; at a still greater distance, and perhaps at a great altitude, one in which the microbes are relatively infrequent, and cause no noticeable effect upon living organisms. Microscopic analysis of the microbes and germs in suspension in the atmosphere, under ordinary conditions, has as yet failed to explain their differential characteristics. The number of such microbes and germs increases and diminishes with their distance from centers of infection and the conditions of ventilation. The same must be true as regards cholera, and, as a matter of fact, who are the individuals who are the most susceptible to cholera? They are those who dwell where the air is most likely to be infected with cholera-germs. When are the attacks most likely to occur? In the night, when the chilled and condensed air is most abundantly charged with microbes. In what localities do we find the greatest number of cases? In low and damp countries, where ventilation is less active, the air more dense on account of the atmospheric pressure, and, therefore, the germs more abundant. Distance has an influence upon microbes, not only with reference to their number and their dissemination, but also with reference to their quality. Such parasites and their germs, removed from their native center, can not find in the climates of Europe an assured existence. The conditions of their multiplication must, of necessity, be changed; hence, the longer the period of time between their birth and their fixation in the suitable medium, the more precarious their functions of nutrition and reproduction. Differences of medium, upon organisms so simple and rudimentary, must act rapidly upon their vital energy, modify their malignity, attenuate their virulence, and destroy their pestilential action. It rarely occurs that they can be transported alive, by atmospheric currents, from their home in the Indies to Europe; but ships are always in readiness as vehicles for their industrious emigration, with their atmosphere below decks abounding in moisture and deficient in ventilation. This furnishes us with an important hint for the use of preventive and preservative measures. The work of the student of science, on the other hand, is to discover, to recognize, and to explain the causative microbe, and to investigate the conditions of its existence—its nutrition and its proliferation. With this end in view, the fluids, the tissues, and the secretions of the body are examined with the microscope, to discover elements which do not normally belong there. If any are found they are at once announced as the source of all the trouble which the disease has caused. In spite of certain obscure conditions, it is quite evident that the comma-bacillus is really the specific cause of cholera. If it is true, as Koch says, that the comma-bacillus dies in acid solutions, but lives in alkaline and neutral ones, this fact can not be insignificant in adopting a curative and counteracting plan of treatment of cholera. On the other hand, this fact would explain how intemperance and faults as to regimen would act in reference to the appearance of cholera. In fact, any irritation whatsoever will increase the alkaline intestinal secretion and diminish the acid gastric one. Thus it might also be explained why attacks are more frequent at night, for we know that, with herbivores and omnivores, the intestinal liquids are alkaline during digestion, while, on the contrary, those who are most like the carnivores, whose bile is acid during digestion, and who subsist mainly upon nitrogenous food, are most likely to be exempt from cholera—that is to say, the rich, who are carnivores to a greater extent than the poor, are less apt to be attacked by cholera. Hence it will be proper, during epidemics of cholera, to partake freely of acidulated drinks, especially those which contain the mineral acids—sulphuric, nitric, and hydrochloric. Such means are much more available to the poor than any particular form of diet, especially one composed principally of animal food. It will now be proper to see whether there is any sign which will enable us to discover the nature of the disease; in other words, to ascertain in what part of the body the microbe is located after it has entered it, and what are the primary lesions which it causes. We must first find out whether the microbe infests the entire organism or is limited to the gastro-intestinal canal. According to the theory of Paquet, the parasites, having entered by the respiratory passages as well as by the digestive ones, encompass the entire organism, multiply in all the fluids, attack the nervous centers which preside over the nutrition of the liver and intestines, and the vaso-motor centers of the bulbo-spinal system. Other writers admit only a multiplication in the intestine, and consider that all other symptoms are secondary, and derived from the intestinal lesions. The theory of Strauss, that the morbific agent of cholera is in the blood, has never been confirmed. Thus far the microbes have only been found in the intestinal fluids, and, if the disease continues for some time, in the superficial layers of its inner tunic. Their absence from the blood, the negative or uncertain results which have followed inoculations, would seem to indicate that they could proliferate and be developed only in the fluid which is secreted by the intestinal glands. In those cases which are overwhelming in their effects and rapid in their termination there are no perceptible lesions; it is only in cases which have lasted a long time that one finds proliferations, hypertrophies, and evidences of vascular irritation, lesions which are evidently secondary, and evidently caused by the disease and not by the morbigenous agent. It would, therefore, appear that the lesions are primarily dynamic. The microbe, having been introduced into the intestine, produces, at the ends of the nerves which radiate from the intestine, a modification which destroys their vitality, paralyzes their action, and thus disturbs the entire vital equilibrium which is necessary to the perfect performance of the functions. This modification may be due to the irritation caused by contact, to the toxic action of the excretions of the microbe, or to its appropriation of vital energies and nutritive elements. From this primary dynamic depression of the great sympathetic the entire series of other symptoms follows, the order of which is satisfactorily explained by the principles of pathological physiology. Thus the two opinions may be harmonized (concerning a possible intestinal or a neural origin), for the lesion which begins in the intestines is immediately communicated to the entire economy, with the rapidity which characterizes neural disturbances. This opinion best explains all the facts; besides, it is founded upon incontestable principles of experimental physiology. In order to thoroughly understand the pathogenesis of all the cases, we must not forget that every disease depends upon two factors, the agent and the patient. According to the quantity and quality of the morbific cause on the one hand, and the impressionability—that is, the organo-vital conditions of the individual attacked—on the other, we shall have an attack which will be mild, severe, or overwhelming; a case of mucous, serous, or asphyctic cholera. With many microbes and great resisting power of the nervous system, an individual may remain free from the disease; with few microbes and feeble resisting power, another may succumb. Physio-

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* In the lower orders of vegetables, as Blainville showed in 1882, the ternary elements of cellulose exist in greater quantity than the azotized elements. Now, as all varieties of cellulose resist the action of ammonia, and as microbes are not altered by it in their morphological characters, differing in this respect from infusoria, it follows that they should be classified among the vegetables. Besides, acetic acid blanches all animal tissues, but microbes resist its action. Finally, hæmatoxylon colors bacteria, which would not be the case if they were microzoa. The straight, elongated form which many bacteria present, is also foreign to animal existences. The motion by which they are animated is not an argument against this opinion, for they only execute a motion of translation by one or the other extremity. If microbes are vegetables they can not live without water; dryness ought to destroy them, and moisture ought to favor their development. The medium in which the microbes are found may not be exactly the same as that which their sporules or germs require, which unquestionably is a moist one. The atmosphere does not transport microbes, but it carries and disperses their innumerable germs. The microbes are the agents of contagion; the sporules of infection.

logical experimentation, according to Armand Moreau, has thrown much light upon this question. He operated by tying the intestine at two points, and then cut the nerves which were distributed in this segment. The next day he found the isolated portion of intestine entirely filled with intestinal secretion. On another occasion, leaving the nerves untouched, the following day there was no fluid in the intestine; its walls were depressed and almost dry, like those of a fasting animal.* This experiment proves the influence of the nerves upon the intestinal secretions. When their functions are regularly performed, the intestine remains dry; but when they are paralyzed or destroyed, the intestine quickly becomes filled with enteric transudation. To this experiment may be added the results of every-day observation. We know the depressing effect of certain moral disturbances upon the intestinal secretions, especially the effect of fear. The frightened animal trembles, the skin becomes pale and cold, the intestinal secretion increases, there is a serous diarrhœa, and the sphincters relax and allow the urine and fæces to escape. This morbid condition, more or less pronounced, is known by the name of *colic*, a term which is mainly used to designate its principal localization. Far from being a metaphor, this is the designation of a morbid physical condition which has its seat in the abdomen. All these symptoms have their origin in a depressing moral impression which produces a reflex paralysis of the intestinal vaso-motor nerves. Add to the effect of fear the influence of the microbes, which increases the cause and aggravates the dynamic lesion, the microbes occupying the entire extent of the intestine, and multiplying in a few hours, with frightful rapidity, when they find conditions which are favorable to their culture; and there will be little difficulty in understanding how the attack of Asiatic cholera is started and developed. Dartier and Morat have observed, in the course

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* Budge, "Compendium of Human Physiology," p. 210, Paris, 1874.

of numerous experiments,* that the intestinal vaso-constriction or paralysis of the great sympathetic coincides with the vaso-constriction of the cutaneous and bucco-facial regions. Thus is explained in a satisfactory manner the coincidence and succession of the symptoms, diarrhœa, algidity, dryness of the tongue, cardiac disturbances, and, as phenomena of dynamic character, the spasms of the muscles animated by the lumbar segment of the cord and then by the upper segments. As all this takes place in connection with the motor-nutrient innervation, we can understand how the related functions may remain intact. The etiological conditions of the disease harmonize perfectly with this hypothesis. In all the epidemics it has been observed how forcibly fear influences the appearance and the gravity of the attack. All authors agree in recommending calmness and courage as the most efficient preventive means. The venerable Burggraeve, who has already had experience in five epidemics of cholera, concludes, after giving different rules of action, "It is fear, above all things, which must be overcome." We have already seen how the effects of fear, which are explicable only as a temporary paralysis of the sympathetic, resemble cholera in miniature. Colds also predispose greatly to attacks of cholera, and we have already seen that the cutaneous vaso-constriction coincides with the intestinal vaso dilatation. Old people, sick people, and convalescents, whose nervous force has been lowered, are also very susceptible to diseases like this, and with them it is very apt to be fatal. The same may be said of those who are much emaciated, and those who are badly nourished. The majority of the fulminant cases occur in those who are subjects of relapse. It is natural that the sympathetic, already depressed by one attack, should less readily withstand a second one. It would appear, then, that of the two morbid factors, the agent and the predisposition, the latter is the more to be feared. There need be no fear of exaggeration if we counsel the use of all measures which are capable of preserving the health of mind and body. This would always be the best way to escape the attacks of a pestilence. Having thus indicated the primary conditions of the disease, let us now see how it is established. The germs which are found in the epidemic centers in great numbers, either suspended in the atmosphere or deposited in the food which is ingested, penetrate through the mouth, the respiratory apparatus, or the digestive canal.* In the respiratory apparatus, where they do not find a medium favorable for their germination, they remain inert. Those germs which penetrate into the stomach find there an acid medium which destroys them. The reaction of the gastric juice, under pathological conditions, may not be acid, however, in which case more or fewer of the microbes would reach the intestines, where they would find a more favorable medium. They would then begin to vegetate, and excite diarrhœa, diminution of the pulse, etc., until they were completely destroyed by surrounding conditions unfavorable to their development; or at least until the enteric secretion, produced either by intestinal irritation or by depression of a moral character, no longer renders their proliferation easy, on account of the chemical constitution and physical condition of the medium. This enteric secretion in question may also be the result of modification of the *régime*, of chilling of the surface, etc. In fact, we know to what an extent almost inappreciable differences in the chemical constitution of the fluid of Raulin influence the development of artificial cultures. As the number of the microbes increases, disease becomes imminent, an attack being made as soon as the resistance of the sympathetic is insufficient to hold out against the disturbed equilibrium which is caused by the specific agent of the disease. Some further chemical and pathological considerations will justify to a still greater degree this way of understanding the pathogenesis of cholera. In comparing this type of microbiosis with other zymotic diseases, we see that there is a complete disparity as to their symptoms. In variola, typhus, yellow fever, the plague, etc., the disease is constituted by two essential elements, the reaction of the organism to the parasites which have invaded it, and their elimination as foreign bodies. The disease is therefore general, prolonged, and cyclical. In cholera there is nothing of the kind; all the symptoms are acute, and are evolved in a short time. There is no reaction preceding elimination, and the disease shows such a degree of gravity, such variable symptoms and progress, that one is compelled to admit that, besides the primary cause, the principal element of the disease lies in the nervous system. The microbes, after having caused intestinal transudation, as a result of vaso-motor paralysis, are themselves the means for effecting their own elimination, or rather evacuation. The intestine, having thus been freed from the microbes, the remainder of the morbid evolution is entirely physiological. After paralysis has occurred there is necessarily a more or less decided tendency toward reaction; the intestines become irritated and inflamed, the temperature becomes elevated, and gives occasion for a new disease, which we might call curative, were we not content with calling it physiological. This disease has nothing specific about it. It is not contagious while it lasts; neither the blood nor the secretions contain inoculable material; the condition is one which predisposes to a new attack rather than otherwise. Cholera itself, therefore, expends itself entirely in the intestine, while the organism at large intervenes only through the medium of its nervous sensibility. However insensible the intestinal nerves may become to stimulants and to peripheric influences, the cholera will pass away almost unperceived. This is the explanation of the efficiency of opium in certain cases, and it is for the same reason that we must limit ourselves to stimulation of the vital energy, and to diminution of the peripheric sensibility, without seeking in any way to arrest the evacuations, which are the unique but natural means for shortening the attack, by eliminating the cause which produces it. Opium, which is very useful for curing simple forms of diarrhœa, which might quickly become choleraic in character as the composition of the intestinal fluids became modified, becomes harmful after the cholera is established, by increasing the time during which the disease-germs are in contact with the organism, and thus supplying new generations of them for the attack. The following conclusions may be advanced as to the relations of the symptoms:

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* See Paquet, "The Preventive Treatment of Cholera," Paris, 1883.

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* It appears to the author that sufficient attention has not been paid to the fact that microbes may enter by the anus. The extreme frequency of attacks which occur in infected latrines, the rapidity with which the disease is propagated when it is carried by means of human *dejecta*, as is observed in the case of armies on the march, lead him to think that this mode of penetration into the economy offers more dangers than its introduction by the superior opening of the digestive canal.

1. Cholera is produced by a microbe, which Koch thinks he has discovered, and which he has called the *comma-bacillus.*
2. The cholerigenic germ is developed in Europe only in the intestinal fluids.
3. The germ is introduced into the organism through one of the orifices of the intestinal canal.
4. The primordial lesion of cholera is a paralysis of the intestinal nerves.
5. All other symptoms are secondary to this paralysis.

After these considerations, which are based upon incontestable facts, we are now in position to find a rational plan of defense and attack with reference to this terrible scourge. We shall, therefore, study in a concise manner the practical consequences which must follow to accomplish the preventive, curative, and preservative treatment of cholera.

Preventive Means.—It is evident that quarantines and sanitary cordons are useful for the arrest of individuals who have been sojourning in infected places, and have brought with them germs and microbes, the vitality of which depends upon certain conditions which are unknown to us, but which we know exist naturally only in the East Indies. These germs can not long survive in the climate of northern and central Europe. Since these microbes can exist, however, in individuals who are apparently healthy, as well as in the sick, quarantine should continue for a longer time than is usually the case, and all immigrants should be submitted to intestinal disinfection with sulphide of calcium and Sedlitz Chanteaud. The dejections of those who are in quarantine should be burned, removed to a great altitude, or mixed with sulphuric acid, so as to disorganize their living elements. A healthy individual, who comes from a center of infection, may be a more decided cause for suspicion and danger than one who is actually suffering from cholera, for the latter, overcome by the disease, can only infect a latrine, a house, or a single place of residence; the former, on the other hand, being entirely unrestrained in his movements, distributes the choleraic germs wherever he goes and wherever he leaves his dejections, thus creating new centers of epidemic proliferation. While quarantine thus established is useful, it is altogether insufficient, since the germs disseminated by the atmosphere are easily blown across such barriers. However, as it has been already observed, they become more innocent and impotent the longer they exist, so that a point may be reached when they cease to be so harmful as when transmitted directly by man. The great means of prevention, and the only effective ones, would be to destroy, from the beginning of the epidemic, *all* the dejections of *all* the inhabitants in the region which has been attacked. This end ought not to be so very difficult to attain.

Counteracting Means.—These general means ought to be completed by the care which is taken by each individual that he does not furnish in his own person a suitable soil for the culture of the germs of the bacillus. In order to attain that end, it will be necessary—

1. To avoid the introduction of germs into his digestive tube.

2. To render the conditions which are suitable for the development of the microbe incompatible with the nature of the liquid contained in the intestinal canal.

In order to avoid the introduction of germs, one should use the greatest care in avoiding all places for evacuating the bowels which are not thoroughly disinfected, either by boiling water or by a suitable disinfecting solution, sulphuric acid being the most reliable of them. The objects which are used for cleansing purposes should be changed on each occasion of use, and thoroughly disinfected. Water and instruments for administering enemata may readily become media for the transmission of the disease. No food which has not been recently cooked should be eaten.

Water should be boiled; but, as it is indigestible in this condition, and by aërating it it again becomes dangerous, weak wines should be drunk in preference, or waters from mineral springs or from localities which are known to be free from the cholera infection. Filtered water which contains five parts of borax in a thousand may be considered free from danger. Between meals those who have disorders of the intestinal canal, or who must be near the sick, should occasionally dissolve in the mouth a pastille of borax or a granule of sulphide of calcium. The studies of Ballesteros lead us to regard the latter as a useful preservative agent; two granules may be given two to four times daily. The windows should be closed as night comes on, but all of them should remain open during the day. Colds and errors of diet must be avoided; for, as they excite the intestinal secretion in either a direct or reflex manner, they render the composition of the contents of the intestinal tube favorable to the development of the microbe. The daily use of Sedlitz Chanteaud may be of service in preventing fermentation in the digestive canal; but dosimetric physicians are divided in regard to this point, some of them agreeing with the general opinion that it is best to abstain from the use of purgatives while Asiatic cholera is epidemic. It must be remembered, however, that purgation from the use of salines is not analogous to the premonitory diarrhœa of cholera.

Esallden stated in the "Union Médicale," in 1849, that he had prescribed, during a recent epidemic of cholera, purgatives and emeto-cathartics by the hundred, cholera not being the result in a single case. He even stated that the use of evacuants, by combating dyspeptic and diarrhœal conditions, would result in saving some individuals from an attack of cholera to which they were predisposed. Fonssagrives,* in commenting upon this opinion, agreed with its author, and approved of the moderate use of purgatives. Each one must act in this matter according to the best of his judgment; but it would seem proper that those who are accustomed to the daily use of a rectal enema should continue it, while those who are doing well without it should not change their habits in this respect without good cause. In the same way, those who require, and are in the habit of using, Sedlitz Chanteaud to correct gastric troubles, should not give up its use through any puerile fear. Whatever goes to maintain health in body and in mind should be continued without hesitation. To advise one to abstain from fear is easy enough, but its practice is difficult. The daily use of strychnine, by acting as a tonic to the nervous system and a stimulant to the mind, should be of great service. The author remembers to have heard Dr. Burggraeve remark that it was his habit to take a few granules of strychnine before proceeding with an important conference; and his pupils have been in the habit of saying that, under such influences, his exposition of his doctrine and his refutation of the objections which were made to it were wont to be made with more than usual clearness and earnestness. Leptandrine, which is advised by Paquet, and which, in that author's opinion, has the property of exciting the hepatic and intestinal nervous centers, may be associated with strychnine, or be given alternately with it.

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* "Traité de Thérapeutique appliquée," tome ii, p. 511.

Curative Means.—If one seeks the most appropriate means, according to classical authorities, for combating this disease in its different phases and according to its different indications, a feeling of fatigue and discouragement must follow, for, among all the remedies which are considered appropriate, there is not one which could be recommended with a degree of confidence which would inspire success. It might be supposed that the scientific progress which has developed since the occurrence of the last few epidemics of cholera would imply corresponding progress in the practical application of that knowledge. Unfortunately, the most varied methods of treatment have been tried in cholera-hospitals in the different countries of Europe without a single step of progress on the part of therapeutics, or the least advantage over the ancient methods of treatment. At the Pharo Hospital, in Marseilles, Trastour has had occasion to compare the results obtained by different means, the latter being advised as means which are most rational, and indicated as those which are most efficacious. The methods by the bichloride of mercury, as a germicide, and oxygenated water, produced no result; the physiological method of treatment with picrotoxine, which produces elevation of the temperature, was equally unsatisfactory, as might have been supposed; inhalations of oxygen revived the patients for only a moment; injections of water into the veins, which was practiced upon two patients, did not prevent them from succumbing in a very few hours. The excitant method of treatment with ether and acetate of ammonia appears to have given better results, but has not served to lower to any considerable degree the mortality in epidemics in which this plan has been followed. Of two hundred and eighty patients which Trastour received at the hospital in a condition which would indicate that recovery was possible, one hundred and forty-six died. In epidemics which preceded the one from which these statistics are derived, in which some patients were treated and others were not, the mortality was about the same—that is, about fifty per cent. Therefore, since science has taught us nothing new in this matter, let us see whether any advantage can be gained in the way of establishing a rational method of treatment by departing from its principles. From the foregoing observations it must be evident that the principal indications can be reduced to two:

1. To destroy the microbes and prevent the development of germs, thus annulling the cause of the disease.
2. To stimulate nervous vitality by means of all the most energetic excito-motor agents, in order to combat the primary functional lesion, paralysis of the intestinal nerves, from which all other disturbances and symptoms proceed.

To satisfy the first indication, we possess the sulphide of calcium, the probable efficiency of which is estimated by the magnificent results which it gives in the other mycoses, and which has the great advantage of being readily tolerated. Of what practical advantage is it that agents, such as corrosive sublimate, sulphate of copper, and carbolic acid, are capable of destroying micro-organisms outside the body if they can not be introduced into the digestive canal in sufficient quantity and in a suitable degree of concentration to accomplish the desired result? Shall we submit the body to a temperature of one hundred and ten degrees, since that temperature is necessary to destroy these germs? The ideal of the investigators should be a parasiticide which will kill the microbes without attacking at the same time the integrity of the digestive organs; and, since sulphide of calcium fills these two conditions, so difficult to unite, it would appear that this is the agent which should be preferred—at least in the present condition of science—as *the* therapeutic agent in cholera.* The second indication should be filled by means of strychnine and phosphoric acid, which are the most energetic antagonists to paralysis. As soon as we have restored the equilibrium of the intestinal nervous functions, and the microbe has disappeared from the enteric mucous membrane, the entire disease will vanish as if by magic, and we will have remaining only an ordinary disease to treat, in which fever or atony will predominate, and the treatment of which will demand no unusual manifestations. If the progress of the disease is not very rapid, we may be able to use certain other medicaments, which would therefore come under the *rôle* of the variant. Spasms may be combated by the bromide of camphor, suppression of urine by digitaline, suppression of perspiration and elevation of the internal temperature by aconitine, and intermittence in the symptoms by the valerianate or salicylate of quinine. During convalescence the atony of the stomach may be treated by leptandrine or quassine, three granules of each before meals; the epigastralgia by a well-regulated diet, and by two granules of the tannate of cannabin every half-hour until a soothing effect has been obtained. Before finishing this subject, it is proper to make an observation with respect to the method of administration and fixation of the doses of the drugs which are required, and also to remind the physician that it is necessary to combine internal treatment with external applications. In cases in which the functions are only moderately deranged, the administration of medicaments should follow the ordinary rules. For the so-called premonitory diarrhœa, which is nothing less than an attack of cholera in its embryonal stage, we should use morphine, brucine, or strychnine, from one to three granules, at intervals varying from a quarter of an hour to two hours, according to the severity of the case. With these drugs we may associate sulphide of calcium in suspicious cases. If, on the other hand, the cholera is established, and the intestinal paralysis is beginning to pass away, we should remember that repeated vomiting and frequent intestinal evacuations, with the associated abundant intestinal transudation, mean that the greater portion of the medicines which have been taken are of no benefit, and that, in addition, the absorption of the remainder is very uncertain and irregular. Even if there is no vomiting, substances traverse the intestinal canal with such rapidity that hardly any portion of them can be of much utility. Under these circumstances we should not give medicaments in the solid condition, but dissolve them in water, or in port or madeira wine, or else in some warm, stimulating infusion, being careful to avoid irritating vehicles, which would greatly aggravate the period of reaction. During the period of intestinal hypersecretion, the doses should be very large and frequently repeated, if we wish to obtain any result from the use of medicines. The limit of the doses should be subordinated to the rapidity with which the evacuations are repeated; and as the diarrhœa becomes subdued, and we look for a more nearly normal degree of absorption, the frequency with which they are given should be correspondingly diminished. In the asphyxial period we should have recourse to hypodermic injections of excito-motor alkaloids; for, if they do not give all the results which we could hope for, they are all that is left us for this extreme period. It is well to begin using them sooner than is customary, and also in a somewhat different way. Injections consisting of one centigramme of hydrochlorate of morphine and one half a milligramme of atropine to a gramme of water may be of service in checking the vomiting, which wears out many patients, and completely disturbs the regularity of the treatment which is prescribed for them. Injections of a ten-per-cent solution of hydrate of chloral, used almost simultaneously at four points—two on the arms and two on the thighs—have sometimes been successful in relieving the cramping pains, and are also perhaps antizymotic. Under the same conditions, and in the same manner, the hydrobromate of quinine may be used in a two-per-cent solution. There may be a particular indication for pilocarpine to re-establish the urinary function, but it must be used with moderation on account of its depressing effects, which would be an obstacle to the establishment of the necessary condition of reaction. The exciting properties of ether may sometimes be used in extreme collapse; one gramme of it pure should be injected at each attempt. All these means must be regarded as designed only to restore the vitality, that then the alkaloids destined to fill the dominant indication may have time to produce all their effects. Applications of electricity may also be of great service as synergistics in the result which is expected from strychnine and phosphoric acid. Fumigations, after the method of Guyton,* and recommended also by Burggraeve, will contribute to the purification of the air of the sick-room, and increase the volume of oxygen for the patient already troubled as to his respiration, while they will also diffuse the disinfecting fumes of chlorine.

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* The results which Ballesteros has obtained fully confirm the foregoing statement.

Everything which can stimulate the activity of the skin, and provoke a healthful derivative action toward it, should be tried. Of all the means which have been used up to this time, derivatives upon the skin have given the most constant and the most advantageous results. This fact is explained by the antagonism which subsists between the cutaneous circulation and that of the mucous membrane, as was shown by the experiments, already quoted, of Dastres and Morat. The theory is that, if intestinal vaso-dilatation coincides with cutaneous vaso-constriction, cutaneous vaso-dilatation will in its turn be accompanied by intestinal vaso-constriction, which is an indispensable factor in the cure of cholera. Consequently, we should not despair of success, but persevere in the use of dry rubbings, rubefacients, stimulants, etc. With regard to the use of the hot blanket, the author hesitates to express an opinion. Though coverings are moistened in boiling water, the patient will be exposed to a chill while they are being adjusted, the consequence of which will be cutaneous vaso-constriction and an aggravation of the intestinal vaso-dilatation. Coverings dipped in cold water would be preferable if one were sure of an immediate reaction, but, under the conditions of this disease, reaction after such means is so problematical that the risk is not usually warrantable. Sometimes it might be advisable to wrap the patient, in a nude condition, in a dry blanket as warm as the natural temperature of the body. Whenever it might be necessary to uncover him, repeated strokes might be made over the entire body with towels moistened in cold water.

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* This method was devised by Guyton de Morveau. The mixture consists of three parts of binoxide of manganese, one of chloride of sodium, and two of dilute sulphuric acid. This disinfectant gave excellent results when it was used, in 1809, by Thome Rodriguez Sobral, a distinguished chemist of Coimbra.

CHOLERA.	DOMINANT.	Infection by the comma-bacillus	Sulphide of calcium.
		Paralysis of intestinal innervation	Phosphoric acid, sulphate of strychnine.
	VARIANT.	Cramps	Bromide of camphor.
		Anuria	Digitaline.
		Fever	Aconitine.
		Intermittence	Salicylate of quinine.
		Vomiting	Codeine. Hypodermic injections of morphine and atropine.
		Gastric atony	Leptandrine, quassine.
		Epigastralgia	Tannate of cannabine.

Chorea.—Chorea is a neurosis from which one may recover spontaneously in the course of three months, more or less, but which nevertheless may, and not infrequently does, lead to a fatal issue. Its pathogenesis can not be readily explained; the most reasonable theory is that which attributes it to an original lesion of a rheumatic nature located in the spinal neurilemma. The disease affects principally the co-ordination of the motions and the economy of muscular contractility. The pharmaco-dynamics of veratrine corresponds perfectly as dominant with the indications suggested by this pathogenic conception, and trials of it have been made by the author with admirable and rapid results. It should be given in relatively large doses, and it is so well tolerated in such doses that it would seem as if vegetative contractility in choreic patients who received such treatment had been blunted by the excessive excitability from which the muscles are suffering.

Two or three granules should be given, therefore, every half- or quarter-hour, day and night, with the greatest regularity, until there is a manifest improvement in the condition, or evidence of insurmountable intolerance on the part of the stomach. In the latter case we should not be discouraged, and should add two granules of codeine to each dose of veratrine; if vomiting continues, in spite of this change of method, we should rest for a few hours, and then begin again with doses of one granule, which should be rapidly increased until the dosage originally prescribed is reached.

We must not hesitate to keep the patient entirely under the influence of the veratrine for three, five, or eight days, increasing the doses if at the end of three days we have not obtained the desired result. As long as the stomach does not reject the drug, nor the pulse indicate a condition of great depression, we can continue the treatment fearlessly, always seeking to avoid an interruption to the influence of the drug, which might annul the entire effect. Most patients are not sufficiently careful to prevent such interruptions, especially at night.

It must also be remembered that this plan of treatment is recommended only for idiopathic or essential chorea. If the chorea is symptomatic, it would be useless to follow this method.

The pains which accompany the ataxia, especially at the beginning of the disease, should be combated by cicutine, two granules every two hours, or by tannate of cannabine, two granules every half-hour. Prolonged lukewarm baths may be used to counteract the hyperæsthesia. The anæsthesia requires no other treatment than the dominant; suitable local means may be added as they are applicable, if desired. Among such means metallotherapy, xylotherapy, etc., may be used.

The cardiac disturbances may result in an ataxic condition as to the heart's movements, in which case the treatment need not of necessity be complicated, or fatigue in the heart-action may be apparent from loss of strength. In the latter case one granule of digitaline, with two of sulphate of strychnine, should be given four times daily. Digestive troubles, which are complications of ordinary occurrence in this disease, should be treated with one granule of hyoscyamine every two hours if there is vomiting; by two to four granules of quassine, before each meal, if there is anorexia; or by three granules of pepsin with each meal, if there is trouble with the gastric secretions.

The anæmia, or chloro-anæmia, which is manifest after the first few days of choreic ataxia, should be treated with two to three granules of the valerianate of iron or of arsenious acid with each meal. Insomnia, which has so great an influence in depressing the strength of the patient, should be combated with the hydrochlorate or the hydrobromate of morphine, associated with croton chloral or the monobromide of camphor. Three granules of each may be used every half-hour.

CHOREA.	DOMINANT.	Want of co-ordination	Veratrine.
	VARIANT.	Pain	Tannate of cannabine, cicutine.
		Anæsthesia	Local measures.
		Hyperæsthesia	Cicutine.
		Cardiac perturbations	Digitaline. Strychnine.
		Digestive disturbances	Hyoscyamine. Quassine. Pepsin.
		Anæmia	Valerianate of iron. Arsenious acid.
		Insomnia	Hydrochlorate of morphine. Bromide of camphor. Croton chloral.

Cirrhosis of the Liver.—See Interstitial Hepatitis (under *Hepatitis*).

Colic, Hepatic.—See Biliary Lithiasis (under *Lithiasis*).

Congestion, Cerebral.—The therapeutics of cerebral congestion should always be based upon positive indications, for in diseases of this character, more than in all others, the result depends upon the interpretation of the case. The investigation of the case should be complete, and should apply with more thoroughness and exactness to the patient's past history than to his present condition. While it may be easy to make a diagnosis quickly in a case of this kind, it is not so easy to say under what conditions the hyperæmia is produced; but these are the very conditions which will indicate the proper line of treatment. Active congestion of the brain may occur, whether from the suppression of a periodical flow (as in connection with hæmorrhoids or menstruation), or from the accumulation of blood in the brain in consequence of a sudden diminution of the capacity of the general circulation (as by means of ligatures, compression of the vessels, etc.). There is, then, a collateral hyperæmia of physical origin, and which must be treated on hydraulic principles—that is, by removing as much blood as will be necessary to restore the equilibrium of the vascular pressure. To accomplish this end we may use general or local bleeding; we may obtain serous discharges by means of pilocarpine, which will at the same time increase the salivary, sudoral, and renal discharges, or we may use saline purgatives. But, even in these cases, we have something besides a physical accumulation of sanguineous fluid to deal with. This accumulation might be again distributed equably in all the vessels, or be carried to some other organ than the brain.

Therefore, the existing condition is principally a certain want of vital equilibrium—a want of resisting power in the cerebral vessels—which demands the administration of strychnine and of ergotine, in order to give to the dilated vessels the necessary tonicity to enable them to oppose a new hyperæmia, which will return, after the abstraction of blood by operation, with returning plethora. Hyperæmia may also originate in the brain itself, in consequence of increased irritability in that organ. Congestions produced by the presence of some morbid product, or by the want of cerebral rest (as in vigils, excessive intellectual labor, etc.), are instances of this mode of causation. In these cases the congestion is the first phase of an approaching encephalitis. Aconitine and digitaline, one granule of each being given every half-hour until an effect is produced upon the circulation, are indicated, and have a rapid and certain action. Revulsives must be avoided, the stimulation to the brain which follows their use being just what we should aim to obviate. Complete rest to the nervous system is an end which must be assiduously sought. The hyperæmia may also be reflex in character—that is to say, the impression upon the brain of a cause which is more or less remote.

An example of this might be noted in the bad results which sometimes follow the use of revulsives; it may be added, however, that this means of treatment is not always contra-indicated in this form of cerebral congestion. Reflex hyperæmia, in most cases, is attributable to the stomach; Sedlitz Chanteaud and the other evacuants are therefore appropriate. In all cases of active congestion we can use cocaine with great advantage, its anæmic effects extending to the brain, especially if it is administered hypodermically. Three granules of it may be used every quarter of an hour.

Passive congestion may be caused by interference with the return of the blood to the heart, whether by an immediate obstacle, which causes an accumulation of the blood in the head, such as a tumor of the neck, which might compress the jugular veins, or by remote obstacles, which act in an indirect manner—for example, cardiac or pulmonary lesions. In the first condition the application of leeches to the nasal fossæ, the mastoid region, or the neck, should first be made, to prevent accumulation of the blood by withdrawing a portion of it. As soon as depletion has been obtained to a sufficient degree, strychnine must be used to prevent an immediate return of the same phenomena. In the second case means must be used which will restore the equilibrium in the circulation, and among such means digitaline, caffeine, strychnine, and Sedlitz Chanteaud will be found especially serviceable. Since congestions, whether active or passive, do not always have the same symptomatic characters, we must sometimes fill, as a variant, indications which are peculiar to a given case. Headache in connection with active congestion may be successfully treated with aconitine, and in passive congestion with the citrate of caffeine. One granule may be used in each case every half-hour. Vertigo, which is a means of terror to patients, and may in this way aggravate the congestion, will disappear under the use of two granules of the valerianate of caffeine every half-hour.

Constipation will yield to the continued use of Sedlitz Chanteaud or podophyllin, or in very rebellious cases to the combination of these purgatives with strychnine or euonymine. Of the strychnine, two granules may be given with each dose, or five of the euonymine. Delirium, which depends almost always upon localized congestion in the gray matter, should be combated, at its first appearance, with aconitine, associated with the bromide of camphor. Three granules of camphor and one of aconitine may be used as often as indications warrant. In the comatose or apoplectic condition it is not essential to give anything in a fluid form to the patient, not only because it is doubtful whether the stomach retains its power of absorption, but especially because there is risk that fluids may enter the respiratory passages on account of the abolition of the movements of deglutition, and thus increase the difficulties of respiration and accelerate asphyxia and death. In the apoplectic form all medication should be hypodermatic. If there is indigestion, injections of five to ten granules of apomorphine will excite vomiting; if there is evidence that a hæmorrhage has taken place, we must use injections of ergotine; if the temperature increases, and the pulse becomes more frequent and harder, we must not hesitate, as a last resort, to use injections of aconitine.* The disturbance which extends to all the vital acts from the cerebral trouble necessitates the greatest care with respect to the alimentation of the patient; for, while indigestion on the one hand may renew the congestion, exaggerated or prolonged abstinence may lead to the same accident, on account of the excess of impressionability and vascular relaxation which accompany organic debility.

* The hypodermic syringe usually contains twenty drops of liquid. It will dissolve twenty granules of apomorphine, of which five drops may be injected every ten minutes until vomiting is produced. The same quantity of water may be used to dissolve ten granules of ergotine, which is a proper quantity for each injection, and may be repeated every half-hour until the patient recovers consciousness.

Four granules of aconitine may be dissolved in the same quantity of water, five drops to be injected at a time, and repeated every hour until the effect is noticeable upon the pulse and temperature.

In passive congestions, due to asystole and dangerous to life, injections of fifteen drops of *liquor ammoniæ* in fifteen drops of water may be made into the median cephalic vein.

CEREBRAL CONGESTION.	DOMINANT.	Active congestion	Collateral	Depletions of blood and serum, strychnine.
			Irritative	Aconitine, digitaline, cocaine.
			Reflex	Revulsives, derivatives.
		Passive congestion	Direct	Leeches in the nasal fossæ or around the ears.
			Indirect	Digitaline, strychnine, caffeine, Sedlitz Chanteaud.
	VARIANT.	Cephalalgia		Aconitine, citrate of caffeine.
		Vertigo		Valerianate of caffeine.
		Coprostasis		Sedlitz Chanteaud, podophyllin.
		Delirium		Bromide of camphor, aconitine.
		Coma		Flagellations. Intravenous injections of dilute ammonia.

Congestion of the Liver.—Few of the organs of the body are so susceptible to hyperæmia as the liver. Compelled, as it is, to experience all the disturbances which occur to the circulatory system, on account of its peculiar anatomical disposition in the course of the blood-current, it is also the seat of active changes, and the point of convergence of all the media by which intestinal absorption is accomplished. It is not an astonishing fact, therefore, that the quantity of blood which reaches it varies each moment, and is influenced by all the conditions which have a bearing upon the status of the general circulation. These changes, which were referred to, are diminished in a favorable manner owing to the extensive ramification of the vessels, both the afferents and the efferents, within the structure of the liver. Hepatic hyperæmia may, therefore, go beyond certain limits, or continue for such a period of time as to be considered a morbid condition.

But, even with this restriction, it is very often observed that there are well-defined congestions of the liver.

Congestion of this organ depends essentially upon paralysis of the pneumogastric; and this fact has been experimentally verified by Vulpian, who cut this nerve, and found, by measuring the biliary secretion, that it could be increased only as the volume of blood was increased to a corresponding degree. Upon this experimental fact, of the accuracy of which there can be no doubt, rests the dominant in the dosimetric plan of treatment of congestion of the liver.

It consists in the use of that agent which produces or provokes nervous force to the most decided degree, and which is designed to take the place of the force which should be transmitted by the vagus; that agent is strychnine. In order to facilitate the practical application of the dosimetric treatment we must consider congestion as mechanical, active, and passive; really admitting, however, that there is no essential difference between the three forms, since all depend upon the same primary cause, insufficiency of nerve-force. They may appear to differ on account of the different ways in which they are established, the rapidity with which they are developed, and the subjective symptomatology which each one presents; fundamentally, they are one and the same thing. Mechanical congestion, which is caused by obstacles to the circulation, either without or within the liver, is also due to the want of resistance on the part of the walls of the blood-vessels to the intravascular pressure. The treatment should consist (1) in destroying or neutralizing the obstacle; (2) in increasing the resisting power of the vessels. Both these indications are filled, if such a thing is possible, by the use of strychnine and digitaline. All indirect means which would diminish the intravascular pressure would antagonize, for the moment, the congestion, but could not be considered as curative agents of this disease.

Purgatives will bring a certain degree of comfort to the patient, but that is their only effect. The same might be said in regard to bleeding, whether from leeches or cups; but the slight advantage which might result is more than compensated by the great risk which attends the use of such means. There are cases, however, in which the congestion must be relieved by whatever means, even though the result be of but short duration.

For example, in cases in which dyspnœa, produced by great enlargement of the liver, is so distressing as to demand immediate relief, we must not hesitate to use purgatives, and especially those which have the property of exciting the secretions of the liver, as well as producing free serous depletion. We should use, as such means, podophyllin or jalapine, associated with the dehydrated Sedlitz, but without discontinuing the strychnine, which, in addition to its *rôle* of dominant, has also the advantage of fixing and rendering more constant the serous ischæmia, which is effected by the current of fluids diverted to the surface of the intestines. As to dosage, three or four doses, consisting of five granules each, of podophyllin or jalapine, with a solution of Sedlitz Chanteaud, will cause copious evacuations, containing an abundance of bile. In cases in which the principal morbid element takes the form of ascites, which we desire to treat with diuretics, we may use caffeine, colchicine, or asparagine, associated with digitaline and strychnine. Two granules of each may be given every three hours. Active congestion has several causes; their suppression usually suffices to cure the patient. Its etiology should therefore be very carefully studied. If the congestion is due to intemperance or the use of irritating food, a well-regulated diet and the use of sulphate of strychnine with each meal will rapidly overcome the hyperæmia.

In tropical regions, where the continuous heat alone seems to weaken the force of the hepatic circulation, we should prescribe two granules of aconitine morning and evening, or oftener if the case requires it. Suppression of perspiration is also a frequent cause of congestion of the liver. The nitrate of pilocarpine, by increasing the contractile force of muscular fibers and producing diaphoresis, will be of great service in such cases. The dose should be three granules every ten minutes, by the mouth or hypodermically. The congestion which accompanies or follows malarial fever may be effectively treated by the arseniate of quinine, combined with the arseniate of strychnine, two granules of each being given three or four times daily.

Simple congestion, which may accompany syphilis, is not of frequent occurrence from such a cause. If syphilis be the cause, calomel is indicated, the doses being graduated in accordance with the severity and chronicity of the disease, and in accordance with the rules of dosimetric therapeutics. There are not usually any alarming symptoms in connection with the establishment of active congestion. It may be accompanied with some elevation of temperature, however, and as this may be the first indication of an imminent hepatitis, we should use one granule of aconitine every hour or half-hour until the temperature has declined to the normal again. The pain in the hypochondriac region is seldom severe; if it should become annoying, and evidences of inflammation should be present, codeine may be administered.

Anorexia will readily yield to treatment with quassine, which also seems to excite the flow of the bile. Tenesmus may be treated by the purgatives which have already been referred to, and by one-granule doses of hyoscyamine, repeated as often as necessary.

Icterus will promptly disappear after treatment with arseniate of soda, six to ten granules of which may be given daily.

By this means the digestive functions will also be benefited. For passive congestion, whatever its peculiarity, the liberal use of strychnine can not be dispensed with. The indication for this drug is so manifest that even Jaccoud appears to advocate it.* In all cases in which stasis occurs, strychnine must be used freely, its effect being aided by hydrotherapy, especially in the form of cold douches. The dominant treatment must be re-enforced by that of the variant, according to the etiological indications. The stases which result from a suppression of the discharge to which the system had become accustomed, or which were indispensable for the performance of its various functions, can be readily combated by aconitine and ergotine, the first having the effect of a bloodletting, the second acting upon muscular contractility, and thus relieving the abnormal pressure in the hepatic canals. One granule of aconitine and three of ergotine may be used every two hours. Habitual constipation may be both a cause and an effect of congestion of the liver; whichever its character may be, it is well to treat it with three granules of podophyllin and two of hyoscyamine, night and morning, together with a sufficient quantity of Sedlitz Chanteaud. Sedentary habits of life, acting somewhat like paralysis, by requiring very little muscular activity, are also a frequent cause of congestion of the liver.

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* "It is very probable that the action of the muscular fibers in the intestines and spleen, and the contractility of the *vena porta*, the hepatic artery, and veins, are necessary to the regular circulation of the organ, and that derangement of these motions may lead to stases."—Jaccoud, "Pathologie interne," 2d edition, tome ii, p. 395.

The best cure for this condition, when it arises from such a cause, is an active life, exercise in walking and riding, sponge baths, and a spare diet.

From the foregoing observations it will be evident that the treatment of this condition is not so simple as the masters in classical therapeutics have described it. The alkalies which are advised by them in almost all cases can only be of assistance by rendering the blood less dense, and thus facilitating its progress through the vessels. This advantage is counterbalanced by the inevitable tendency of the alkalies to destroy a great number of the red corpuscles, to increase or to produce anæmia, which is developed by the nervous debility which gives rise to passive congestion, and thus to inclose the disease in a vicious circle, from which there is no relief but the adoption of a different line of treatment. The diseases which the allopathic practice produces, and the paternity of which it ingenuously admits, by giving them sonorous and elegant names, give us a proof that forces which are out of equilibrium are not to be overcome or restored by the application of material influences. Anæmia from the use of alkalies is an artificial disease which is produced by allopathy, a hybrid product of science and blindness.

CONGESTION OF THE LIVER.

1st. Mechanical.

Dominant.	Want of heart-force for organic disturbances	Digitaline, sulphate of strychnine.
Variant.	Dyspnœa owing to excessive size of the liver	Podophyllin, jalapine, Sedlitz Chanteaud.
	Ascites	Asparagine, caffeine, colchicine.

2d. Active.

Dominant.	Paralysis of the muscular fibers of the vessels, of those of the capsule of Glisson, and of the abdominal muscles	Sulphate of strychnine.
Variant, symptomatic.	Fever	Aconitine.
	Hepatic pain	Codeine.
	Anorexia	Quassine.
	Tenesmus	Hyoscyamine.
	Constipation	Sedlitz Chanteaud.
	Icterus	Arseniate of soda.
Variant, causal.	Irritating food	Diet.
	Elevated temperature	Aconitine.
	Suppression of perspiration	Nitrate of pilocarpine.
	Malarial infection	Arseniate of quinine.
	Syphilitic infection	Calomel.

3d. Passive.

Dominant.	Paralysis of the muscles which can influence the circulation of the liver	Sulphate of strychnine. Hydrotherapy.
Variant, causal.	Suppression of customary discharges	Aconitine.
	Constipation	Podophyllin. Sedlitz.
	Sedentary life	Exercise.

Congestion and Œdema of the Lungs.—Congestion of the lungs may be either active or passive. The first, or fluxion, may be *irritative*, when the agent which produces it acts upon the pulmonary tissue itself; *reflex*, when it acts upon a distant point, whence the irritation is transmitted to the lung; *the result of want of equilibrium as to pressure*, when the vessels are deficient as to the degree of external pressure which regulates their capacity; the result of want of equilibrium in the circulation, when the intra-vascular pressure is increased on account of obstacles which are introduced into the circulation.

Aconitine is the remedy which should be preferred, being administered with more or less constancy, according to the degree of the fluxion. One or two granules may be given every half-hour, or less frequently.

Passive congestion results from the retardation of the blood in the pulmonary vessels. The stasis in this case is due either to an obstruction in the current or to weakness of the heart's systole. Two granules of digitaline may be prescribed, two to four times daily. This will increase the energy of the heart, and make its movements more regular and effective. Œdema is due to the transudation of serum through the vessels, in consequence either of changes of pressure or of alteration in the constituents of the blood. The first of these causes proceeds from pulmonary lesions, the second from general diseases. Aside from the particular treatment of the original lesions, we may use five granules of podophyllin two or three times daily, with a teaspoonful of Sedlitz Chanteaud for each dose of the podophyllin. Purgative and diuretic medication may be used alternately. Five granules of caffeine, given two or three times daily, will fill the latter indication, the object being to obtain not a violent but a mild action, which can be continued a long time without exciting intolerance. In all these cases there is a common and principal vital lesion—vaso-motor paralysis.

However much the congestion may be due to irritation or to stasis, to whatever degree the œdema may already exist, the vessels dilate because the vaso-constrictor nerves do not oppose sufficient resistance to the tendency to dilate. The true *dominant* indication is, therefore, strychnine, that reliable vital excitant and most faithful regulator of all the substances which act upon the organism. For the active congestions preference should be given to the arseniate or the sulphate of strychnine, two granules of each every two hours; for the passive congestions two granules of the hypophosphite, four or five times daily, will be appropriate. Pain is sometimes present, either before or during the period of congestion, and should be met with two granules of the hydrobromate of morphine every quarter of an hour.

Hæmorrhage, which will often, apparently, abort the congestion, is almost always a symptom which is followed by bad results, even among those who are exempt from all traces of tuberculosis. It should always be treated with ergotine, three granules of which may be given every quarter of an hour. Dyspnœa calls for digitaline, to aid the heart in relieving itself of an excessive supply of blood; one granule may be given every half-hour. Cough, which causes afflux of the blood and exaggerates the irritation, may be soothed by two granules of codeine every quarter of an hour. If a febrile movement should manifest itself, we may combine aconitine and digitaline, one granule of each every half-hour, repeating until the normal temperature is again reached.

CONGESTION AND ŒDEMA OF THE LUNGS.

DOMINANT.

Active congestion	Irritative Reflex From want of equilibrium in pressure From want of equilibrium in the circulation	Hyperæmia	Aconitine.
Passive congestion	From mechanical obstructions in the circulation From cardiac weakness	Atony	Digitaline.
Œdema	From local diseases From general diseases	Transudation of serum	Podophyllin. Caffeine. Sedlitz.

VARIANT.

Pain in the side	Hydrobromate of morphine.
Hæmorrhage	Ergotine.
Dyspnœa	Digitaline.
Cough	Codeine.
Fever	Aconitine.

Congestion of the Uterus.—Active congestion or fluxion of the uterus frequently occurs at the period of puberty, in conditions of plethora, and with very irritable women. It may be caused by prolonged continence, by excessive sexual indulgence, by masturbation, by emmenagogues, by suppression of the menses, and by colds.

It almost always comes on suddenly, and is announced by a feeling of heat and weight in the pelvis, the perinæum, and the sexual organs. It is sometimes accompanied by spasms or by uterine colic, due to contractions which have been excited by the excess of blood. The patient remains apyretic, and after a few days of rest and careful diet all the symptoms will as a rule disappear.

If these congestions are neglected, an exaggerated condition is favored, and sooner or later there may be an acute or chronic metritis which can be attributed to no other cause.

Uterine congestion depends, on the one hand, upon an accumulation of blood in the organ; on the other, upon a too distensible condition of the walls of the uterine vessels.

Aconitine and ergotine are the agents which will restore the uterus to a normal condition; one granule of aconitine and two to four of ergotine being given every two hours. At other times the condition seems to be caused by a spasmodic condition, which is opposed to the free passage of the blood.

This is what occurs in congestions which follow violent disturbances of a moral character. One granule of hyoscyamine every two hours will quickly restore the physiological equilibrium.

Uterine colic, which is sometimes extremely violent, has the same cause, and calls for similar though more active treatment, one granule of hyoscyamine or of valerianate of atropine being required every half-hour until an effect is produced.

Together with the uterine congestion there may be a similar condition of the bladder, and the frequent desires to micturate which are symptomatic of it may be relieved by two or three granules of the bromide of camphor every hour. After the congestion has disappeared we should give for a long time, in gradually decreasing doses, ergotine or sulphate of strychnine, to give tone to the organ and ward off a repetition of the hyperæmia—two granules may be given three to five times daily.

CONGESTION OF THE UTERUS.

DOMINANT.	Hyperæmia	Aconitine.
	Muscular atony	Ergotine.
VARIANT.	Spasms	Hyoscyamine.
	Colic	Valerianate of atropine.
	Frequent micturition	Bromide of camphor.

Constipation.—This is a symptom which occurs in several morbid conditions, and indicates different disturbances in the physiological condition of the intestines according as it is caused by changes in their contents, or in the activity of their blood circulation, their innervation, their contractility, or in the secretions of the glands which open upon their inner surface.

The hygienic regimen of an individual, and especially the matter of diet, has a great bearing upon constipation in its various forms. A difference in the water that one drinks, a diminution in exercise, a moral impression, a change in the hygrometric condition of the atmosphere—any of these is sufficient to disturb the regularity of the intestinal function.

Constipation is of short duration if its causes are also transient. A discussion of the necessary plan of treatment for accidental constipation is not required, for the simple removal of its cause or the use of a small quantity of Sedlitz Chanteaud will relieve the difficulty. But, if the causes recur daily, and the constipation continues a long time, we can not expect to get rid of the difficulty so easily. In such cases it becomes necessary to search carefully for the physiological element whose activity is perverted, that is, for the predominant morbid element, in order to obtain safe and durable results. The act of defecation depends upon different factors, the most essential of which are the presence of the fecal mass, an impressionable condition of the intestines, an impression transmitted to nervous centers, and the provocation of expulsive movements. In addition it is necessary that the intestinal canal be not obstructed, and that it should be lubricated by the secretions of mucus and bile, so that the mass may be projected by the contractions of the intestines which are exerted upon it. The muscular fibers of the intestines are arranged in two layers, one of which is circular and the other longitudinal, the two layers acting forcibly together in the peristaltic movements of the intestines. The circular fibers compress the contents of the intestinal tube and thus force them onward, but, if this constriction is exaggerated or is exerted beyond the usual point, spasm will result, the *dominant* indication for which will be hyoscyamine, daturine, or atropine, the regulating properties of which in certain forms of constipation have long been known. When the spasm ends, the longitudinal fibers again become predominant, and the physiological equilibrium, without which there can be no health, is again restored. One or two granules of the before-mentioned alkaloids may be given twice daily for several weeks. After regularity of defecation has been established, it is necessary to continue this line of treatment for some time, though in diminishing doses, to prevent a recurrence. Intestinal paralysis, on the other hand (as a cause of constipation), demands the sulphate or the hypophosphite of strychnine, in doses of two or three granules, three times daily. In other cases, the main cause of the coprostasis is to be found in the circulation. There is, perhaps, a chronic hyperæmia, which by its influence upon contractility, upon the secretions, or upon the resorption of the intestinal fluids, modifies in different ways the movement or the composition of the fecal mass. There may be various causes for this hyperæmia. It may be due to a want of physical exercise, to irritating elements, or to compression of the abdominal organs, etc. The *dominant* treatment will consist in the use of two granules of aconitine two or three times daily, and in the removal, at least so far as possible, of the exciting causes. The fecal mass may also be retained in the intestine on account of insufficient lubrication. A diminution in the quantity of bile and intestinal mucus secreted always produces coprostasis. To increase the flow of bile we use cholagogues, among which podophyllin is especially serviceable. The action of podophyllin, as used by dosimetrists, is always mild, and patients are never annoyed by the griping pains which many practitioners ascribe to it, as an inevitable concomitant. The difference in effect may depend upon the purity or impurity of the drug. As a regulator it may be given in doses of three to five granules every evening; as a purgative, in doses of three granules every half-hour, until three or four doses have been given. The full effect of this medicine may not be experienced for twelve to twenty-four hours. A more rapid and profound result may be obtained by combining with it small doses of Sedlitz Chanteaud.

Sedlitz Chanteaud is of itself an excellent laxative, which may be used every day without causing either pain or exhaustion. As its taste is slightly disagreeable, it is well to combine with it an equal weight of sugar. For those persons who are subject to constipation on account of a want of exercise, or on account of the water which they drink, or on account of improper alimentation, the Sedlitz will be the best remedy. A suitable dose is a teaspoonful with a teaspoonful of sugar, in half a glass of water, night and morning. A few swallows of water may be taken after this draught, which may be taken with relish and profit for a long time.

An imitation of this salt is on the market, but it is nauseating to the taste on account of the impurities which it contains. If one is to use this salt systematically, it is better to buy it in the original bottles, and thus be sure of obtaining the genuine. When constipation is complicated with other troubles, the Sedlitz may be combined with agents which are suitable for the complications; thus we may avoid increasing the doses of the Sedlitz. The deficiency in the supply of bile may be corrected by the use of three granules of colchicine every evening, or by ten granules of euonymine, or by ten granules of iridine. The deficiency of mucus, which is indicated by hardness of the fæces, and their division into *scybalæ*, calls for two or three granules of veratrine half an hour before each meal. Jalapine, elaterine, and hydrastine are excito-motors of the muscular coats, and excite the secretion of bile. They may be used as substitutes for podophyllin, iridine, or colocynthine, in doses of three to ten granules, from one to three times daily. Those agents which excite the secretions should be given in such a manner as not to exhaust the organs upon which they are to act, nor to make them a necessity for those organs. The doses should be graduated in accordance with their effects, the objects being that the system should suffer neither from excess nor from deficiency in the use of these drugs. Skill on the part of the clinician consists in requiring only what is necessary, and in not terminating a course of medication too early or too abruptly. In the treatment of chronic diseases, since the effect of medication is not so evident as in acute ones, we must rely upon time and perseverance in place of the activity and energy by which the treatment of acute diseases is characterized. It is also worthy of note that it is more difficult to retain results in chronic diseases than it is to acquire them, and this difficulty is mainly due to a want of patience on the part of the sick person, or of perseverance on the part of the physician, both trusting too much to fortune, which rewards tenacity of purpose rather than audacity. After the fecal mass has reached the large intestine, its presence excites contractions in different groups of muscular fibers which concur in the act of defecation. If the mucous membrane is deficient in sensitiveness, no impression is communicated to the nervous centers, and the fæces accumulate without a consciousness on the part of the patient that they should be evacuated. Inertia of the rectum leads to the same result. Palliative means of treatment for this condition consist in the use of rectal *enemata* of cold water, and removal of the scybalous masses with the finger. Curative means are furnished by the hypophosphite of strychnine and phosphoric acid, two granules of each three or four times daily, or by electricity. In cases of inertia, five granules of bryonine or of colocynthine may be given two or three times daily. If the diet is composed of such food as leaves little residue after digestion, the evacuations will be less frequent and less abundant. In such cases there is no real constipation, for there is no retention of material. The remedy consists in giving a different kind of food. In no case is it well to leave the intestinal secretions in the digestive canal for a very long time, because, aside from other inconveniences, it is indispensable to health to keep the passages for elimination and absorption free and unobstructed. This end may be accomplished by using Sedlitz Chanteaud every other day. Coprostasis which is caused by mechanical obstacles to the passage of the fecal mass will be considered under the head of intestinal occlusion. Whatever the pathogenic cause of constipation, there are certain symptoms which frequently accompany it, and may call for special treatment. The *variant* requires active means in this as in all cases, while the *dominant* requires means which can be used for a long time without danger; it may be necessary to vary the dosage, or even to substitute its *succedanea*, but the indication continues constant.

Headache, which is present in some cases whenever there is the least irregularity in the intestinal functions, may be treated with two granules of guaranine every half-hour, or by one granule of aconitine, if there are signs of cerebral congestion, every half-hour, or less frequently, according to circumstances. Two granules of caffeine may be given every quarter of an hour for the vertigo. Want of appetite and gastric catarrh, which frequently occur in connection with habitual constipation, may be treated with two granules of quassine every three hours, or four granules of colocynthine night and morning. Lumbar pains, which are indicative of congestion of a particular character, may be treated by one granule of aconitine every two hours. Eructations, which occur when there is intestinal paresis, will quickly be controlled by three granules of brucine or two of sulphate of strychnine three to four times daily. Colic may be soothed with one granule of hyoscyamine every half-hour, or two of gelsemine every quarter of an hour.

CONSTIPATION.	DOMINANT.	Spasm		Hyoscyamine, atropine, daturine.
		Paralysis		Sulphate and hypophosphite of strychnine.
		Hyperæmia		Aconitine.
		Deficient secretion	of mucus	Podophyllin.
			of bile	Veratrine.
		Anæsthesia		Rectal enemata, bryonine, colocynthine.
		Torpor		Proper diet, Sedlitz Chanteaud.
		Mechanical obstacles		(Under *Intestinal Occlusion.*)
	VARIANT.	Headache		Guaranine, aconitine.
		Vertigo		Citrate of caffeine.
		Want of appetite		Quassine, jalapine.
		Lumbar pains		Aconitine.
		Eructations		Brucine, strychnine.
		Colic		Gelsemine.

Coryza.—See Rhinitis.

Croup.—See Diphtheria.

Cystitis.—Inflammation of the bladder may arise from different causes. At one time it may be caused by cold or by traumatism, including in the latter term difficult parturition and maladroit catheterization; at another by the extension of an inflammation in neighboring or contiguous organs; at another by direct irritation of the mucous membrane from contact with a foreign body, or with urine which contains an irritating substance which has been eliminated by the kidneys, or is due to decomposition of the urine itself. In the greater number of cases of acute cystitis a cure results from the suppression of their cause; but the disease not infrequently becomes chronic, and the effect persists after the cause has disappeared. In the treatment of simple acute catarrhal cystitis aconitine should be the *dominant.* As long as the symptoms indicate inflammation of the vesical mucous membrane, whether there be an accompanying febrile condition or not, we should use aconitine at longer or shorter intervals, according to the severity of the inflammation. One granule may be given every quarter of an hour, every hour, or every two hours, until the desired result is obtained. The temperature in some cases reaches 40° C. If there are decided intermissions, either in the fever or in the other symptoms, twenty granules of hydrobromate of quinine may be given every two hours. Acute cystitis is always accompanied by pain, which is more or less severe in character. At times it is localized in the hypogastrium, at others it radiates to the perinæum, the testicles, etc. If much suffering is experienced, two granules of cicutine may be given every hour until the pain is relieved. Tenesmus, which is sometimes unendurable, may be treated with one granule of hyoscyamine every half-hour until micturition becomes less frequent, or until the physiological effect is produced. Hyperæsthesia of the mucous membrane, which causes the urine to produce a scalding sensation and compels one to empty the bladder frequently, may be relieved with three granules of the monobromide of camphor every half-hour.

Sedlitz Chanteaud should be taken freely, not only for the purpose of keeping the bowels freely open, but also to alkalinize the urine. If the sphincter is contracted to such a degree as to prevent free discharge of the urine, retention may result, which in some cases will require surgical attention. These means should never be employed except in cases of great urgency, and only after the use of such alkaloids as hyoscyamine, daturine, and atropine, which will tend to dilate the sphincters. Retention, by exaggerating the dilatation of the bladder, may produce paralysis of its muscular coats, in which case the administration of the sulphate of strychnine will be required to restore vitality to the contractile elements. One granule may be given every half-hour, and hyoscyamine may be combined with it if the circular fibers show an exaggerated tonicity. Chronic cystitis is singularly rebellious to all means of treatment, hence the necessity is apparent of treating the inflammation in its early stages, modifying the character of the urine, and manifesting such energy as will cause a disappearance of the given lesions. The increase in the secretion of mucus by the bladder should be treated with two to four granules of arbutine four times daily, and five granules of the benzoate of soda four times daily. The use of revulsives, especially those of a caustic character, is not always attended with good results. If there is suppuration, two granules each of iodoform and arseniate of soda may be given three or four times daily, and the bladder may also be washed out either with simple warm water or weak solutions of nitrate of silver, tannin, etc. A catheter which will admit of a double current must be used, and the injection must be made with great care, to avoid dilating the bladder. If the products of ammoniacal decomposition of the urine are being absorbed through a more or less ulcerated mucous membrane, Sedlitz Chanteaud or some other saline laxative must be given, and means must be taken for prompt removal of the ammoniacal urine and careful cleansing of the bladder.

Septicæmia resulting from decomposition of diseased tissues will also require the use of the same surgical means as the foregoing, while internally two granules of salicylate of quinine and salicylate of ammonia may be given every hour. Cantharidal cystitis, which results from the prolonged application of cantharidal vesicants, may be relieved by hyoscyamine and the bromide of camphor. Cystitis of rheumatic origin should be treated with colchicine. The paralytic form of cystitis, occurring in the aged, should be treated with three granules each of quassine and hypophosphite of strychnine at each meal. Alkaline and sulphurous mineral waters may be useful in all cases of chronic cystitis. Careful diet, frequent evacuation of the bladder, and abstinence from alcoholic drinks and from irritating food are prescriptions which the physician should never fail to give, and the patient to follow in all cases of this disease.

CYSTITIS.	DOMINANT.		Inflammatory element . . .	Aconitine.
	VARIANT.	Acute cystitis	Fever . . .	Aconitine.
			Periodicity . .	Hydrobromate of quinine.
			Radiating pains .	Cicutine.
			Tenesmus . .	Hyoscyamine.
			Hyperæsthesia .	Bromide of camphor.
			Constipation . .	Sedlitz Chanteaud.
			Paralysis . .	Hypophosphite of strychnine.
			Rheumatic element	Colchicine.
			Cantharidal elimination . .	Hyoscyamine.
			Catarrhal secretion	Arbutine, benzoates.
		Chronic cystitis	Purulent discharge	Iodoform, arseniate of soda.
			Ammoniæmia .	Saline purgatives.
			Septicæmia . .	Salicylates of quinine and of ammonia.
			Paralysis . .	Quassine, hypophosphite of strychnine. Hydrotherapy.

Cysts (*Hydatid, of the Liver*).—From the eggs of *Tænia echinococcus* are produced *cysticerci*, which find a lodgment in different organs, but especially in the liver, where they multiply and form cysts which sometimes reach an enormous size. These cysts give rise to various troubles, and frequently cause death, either by opening into important organs, by causing purulent infection, or as a result of the hæmatopoietic disorders which are inseparable from disturbances in the functions of the liver. As a means of prophylaxis, one should not drink river-water, nor water which is likely to have flowed over or drained through fields in which animals which are subject to tænia have been kept. Boiled water is free from all danger of producing this condition. Surgical treatment is almost always required, whether one operates by aspiration, by means of large openings, with injections of a one-per-cent solution of hydrate of chloral, or by electrolysis. But, whatever procedure be adopted, medical treatment should be tried to accomplish, if possible, the absorption of the contents of the cyst, which is considered a lesser evil than the long period of suppuration which will follow either of the operations suggested. In the first place, iodoform should be given in doses of four to eight granules three times daily. If the result of this treatment proves unsatisfactory, we should operate, opening the cyst with a large trocar, and completely evacuating it. Frequent injections should subsequently be made, and a drainage-tube should be left in the wound. Surgical treatment should be attended with antiseptic precautions, and subsequent treatment should be tonic and antipyogenic, two granules each of iodoform and of arseniate of soda being given three or four times daily, and two or three granules of arseniate of strychnine with each meal. Should fever follow the operation, one granule each of aconitine and arseniate of quinine should be given every half-hour until the fever abates. For other indications as to treatment, any of the classical works on therapeutics may be consulted.

Delirium Tremens.—Life is, without doubt, the result of the struggle between stimulant agencies—either from without, and received by the peripheral ends of the nerves, or from within, and received by the nervous centers and the splanchnic radiations; and, on the other hand, individual impressionability, which results from the impressionability peculiar to each anatomical element. Life depends, therefore, upon the external and internal *media* appertaining to the individual, and upon his somatic constitution, which is animated *ab ovo* by a special force which is called *vital force*. Differences in life will result, therefore, perhaps from modifications in its *media*, perhaps from changes in impressionability, perhaps from both these causes combined. Gradual intoxications have only the effect of modifying the material constitution of the individual by causing assimilation of substances foreign to its normal composition; they also change the constitution of the blood, that internal medium, the troubles of which have much more importance than bad external conditions. They thus give origin to impressionability of a new character, for the elements, being compelled to live in a modified medium, end by adapting themselves to that medium, in which their reactions are different from what they were originally. For a long time this adaptation will preserve the vital equilibrium, with all the appearances of health; but, if the new stimulant to which the system has become habituated suddenly fails, the entire equilibrium will be destroyed, because the adaptations are slow and progressive, and the vital acts can not be accomplished with the regularity and perfection which is observed in the case of individuals who are in a normal physiological condition. In a word, the organism accustomed to the exceptional finds itself in the presence of the regular, and in unusual conditions which disturb it profoundly. Such is the course of events in connection with alcoholism. Not only does the alcohol modify the tissues physically and chemically, it also modifies the blood-current, and mingles with the secretions, thus acting in a double manner upon impressionability. In fact, the sensibility, contractility, and irritability of alcohol-users are no longer the same as before their excesses began, and for that reason physiology, pathology, and therapeutics, as applied to such cases, are entirely different from their application to sober and temperate people. In other respects the lesions which one finds in alcoholics are the same as those which are observed in pathological states due to other cause, and having the same anatomical situation. The treatment will therefore be the treatment which is proper for such lesions, aside from the removal of the cause. But it is not the same for functional lesions, the most of which are peculiar to alcoholism, and demand peculiar treatment. The functional perturbations arise from changes in the physiological condition, as has been already explained, and neither require a long time nor are difficult to cure, if one understands the treatment which should be adopted. It must be clearly understood that the least change in this artificial physiological condition necessitates decided disturbance of equilibrium, and may even be the cause of death, without the manifestation of sufficient cause, from such a source, to explain it. Sufficient cause for a sudden and unexpected attack of *delirium tremens* may be found in an increase in the elimination or a decrease in the dose of alcohol, in an exaggeration with respect to its combustion, an exaltation in the impressionability of the individual—in fact, in a cause which might, under ordinary circumstances, seem insignificant. The duration of such an attack will depend upon the manner in which it is treated, and the different causative elements. All the causes which lead to want of equilibrium in such cases may, however, be reduced to two: diminution or increase of the habitual stimulant relatively to the impressionability of the patient. These two modes of pathogenesis must be held in mind in arranging a plan of treatment, and one must be carefully distinguished from the other, the more because the problem of treatment is almost always complicated. We should therefore consult the impressionability of the patient, incite it when depressed, or soothe it when exalted. Whatever be the customary dose of the stimulant, we must suppress it, for it is preferable to seek to restore the equilibrium by acting upon the vitality. If the absence of the stimulant causes disorder in the functions, we must use incitants; if, on the other hand, the trouble is due to excessive use of the stimulant, we must restore calmness, either by inciting antagonistic functions or by weakening synergical functions. Life being a struggle, a conflict, the resultant of opposed and antagonistic forces, there are in all diseases two means of restoring the equilibrium of health: one, a direct method, consisting in an attempt to correct the disturbed functions immediately; the other, an indirect one, by acting upon the functions which moderate or regulate the first. The form of treatment which is most in vogue for *delirium tremens* is that which was suggested by Jaccoud, and consists in the use of alcohol. If the attack is produced by the want of the habitual stimulant, or of any other stimulant. which, with the habitual one, will establish the functional equilibrium, the results of this treatment are prompt and admirable. But if the quantity of the stimulant consumed is in excess, or, the dose of the stimulant remaining the same, the impressionability is exalted, alcohol as a means of treatment will do harm, and we should use in preference such calmatives as digitaline, aconitine, hyoscyamine, morphine, chloral, etc. But alcohol, even in cases in which good results may be expected, on account of its previous disuse as a stimulant, is a bad remedy, because it tends to perpetuate chronic alcoholism, and may cause the repetition of acute paroxysms. Besides, it has the great disadvantage of being opposed to reformatory steps on the part of the patient, for, if alcohol serves to cure alcoholism, it ought to be still more useful as a means of preventing it. With such treatment the patient has no opportunity to cure himself of his bad habits, and be enabled to live without using alcohol. Nothing can equal strychnine in the treatment of this condition. Aside from the fact that it is superior to alcohol as an incitant, it also gives better results. It was first recommended by Falck Wunderlich and then by Luton. Recently it has been used with considerable audacity by Lardier, who seems to have borrowed his method of administration from the dosimetric system. He has obtained the best results without running any risk. The doses should be very large, and should be repeated at short intervals. Three to five granules at a dose may be given every half-hour or hour until an effect is produced upon the insomnia and the condition of the pupils. Strychnine is not suitable for all cases, however, and should not be administered alone. Often, in place of cerebral asthenia, one meets with a hypersthenic condition in *delirium tremens*, or these two conditions may co-exist in different parts of the nervous system—a condition which requires the use of hyoscyamine until the physiological effect is indicated by the condition of the pupils and pulse. The following case demonstrates the fact that we must not use the same remedy for all cases, nor even for all phases of the disease in the same individual: F—— was suddenly stricken in the street with apoplexy, and was borne to his house in an unconscious condition. He revived after a short time, but was excessively agitated, delirious, and wakeful; his countenance was red, his pupils were dilated, his pulse full. Three granules of arseniate of strychnine hourly were prescribed until he should become quiet or go to sleep. The next day he was much more tranquil; he had slept well, and his pupils were normal in appearance, but his delirium, though less intense, continued. The strychnine was persisted in on account of the previous good results. His next night was a bad one, and on the following morning his delirium was more intense, and had changed its character; the pupils were excessively contracted, the pulse was hard, and the countenance pale. Under these circumstances, hyoscyamine was substituted for the strychnine. One granule every three hours restored the patient in twenty-four hours, excepting a general weakness, which lasted a long time, and which was due to the want of alcohol, from which the patient abstained as long as he was confined to his bed. He was thus under the best conditions for recovery, for abstinence for a month is sufficient for one of good will-power to overcome a habit which is as blameworthy as it is harmful.

ALCOHOLIC DELIRIUM.	DOMINANT		Suppression of the alcohol.
	VARIANT.	Want of stimulant	Strychnine.
		Increase of impressionability	Hyoscyamine.
		Sthenic condition of the circulation	Digitaline, aconitine.
		Insomnia from want of stimulant	Morphine.
		Insomnia from excess of stimulant or increase of impressionability	Codeine, narceine.

Dermatoses.—The study of diseases of the skin ought to be placed upon new foundations. All the classifications which have thus far been presented have the fault of overlooking the vital nature of the different lesions, and attributing importance only to organic lesions, those which are apparent and superficial. This fault is especially perceptible in its application to the subject of treatment. The Vienna school goes even further, and pretends to isolate the affected portion from the rest of the organism, but the facts do not cease to protest against this *localism*. The result of these artificial classifications, which attach to themselves scarcely any of the important elements of the diseases, is to reduce the therapeutics of this department to a chaos of empirical formulas and remedies, to apply to the same lesions different preparations, the pharmacodynamics of which often differs, and is sometimes antagonistic, and to prescribe almost always the same treatment for all diseases. Cutaneous diseases ought to be divided into two great classes, leaving aside those in which the eruption is only a secondary symptom of a general disease—for example, the eruptive fevers, purpura, etc. The first group includes diseases which consist in the irritation of the cutaneous tissues produced by the presence of parasites, as in scabies, favus, etc. The second should include those which proceed from a lesion of the vitality—that is, from a fault in the innervation, whether of excess or perversion. These functional troubles lead to disorders of nutrition and circulation, which in their turn cause organic difficulties, which are manifested externally by the different dermatoses. Modifications of the secretions, which are the essential features of the diatheses, cause dynamic troubles in the nervous expansions, which are transformed into lesions which are localized in the regions where a supplementary cause of irritation exists, or some difference in vitality limited to a small number of nerve filaments. The dominant in the dermatoses should vary, therefore, with the dynamic cause which produces it. If the irritation is caused by parasites, we must eliminate the cause with sulphide of calcium and the most appropriate local treatment; if the trouble arises from a want of innervation, we must give strychnine and phosphoric acid; if, on the other hand, the irritation reveals an exaggeration of the phenomena of nutrition, we should give aconitine or veratrine. For the diathetic dermatoses, the treatment which is fundamental for each diathesis is proper—that is, mercury for syphilitic, the arseniates for the herpetic, colchicine for the arthritic, iodoform or sulphide of calcium for the scrofulous. In the treatment of diseases of the skin, we should be less influenced by the outward form of the lesions than by the principal morbid element which characterizes them. In eczema, in many cases of acne, in herpes, sycosis, etc., that which excites attention is the congested condition, the phlogosis of the skin. Eight to twelve granules of veratrine daily will be found effective in these cases, because by its depressant action it destroys the principal morbid element of the disease. In the active forms of hyperæmia, like erythema, etc., aconitine will prove effective on account of its anæmiating properties. Two granules may be given for this purpose three or four times daily. Pemphigus, rupia, and ecthyma, which are the outward evidences of great vital depression, call for the use of the arseniate of iron and the hypophosphite of strychnine. Two granules of each may be given four times daily. Those affections which are characterized by dryness of the skin, especially the squamous affections like psoriasis, icthyosis, etc., indicate defective nutrition in the epithelial tissue, which may be corrected by the arseniates, and especially by arsenious acid, six to ten granules of which may be given daily. Those diseases which are accompanied by pruritus or neuralgia, like zona and prurigo, should be treated by calmative agents to the nervous system, especially by cicutine, two granules of which may be given four or five times daily. The method of treatment will be governed by the time that the disease has lasted, or, in other words, by the degree of resistance which is opposed to the remedies used. Thus, an exudative eczema which has lasted only a few days can be cut short by active treatment with veratrine, one granule of which should be given every quarter of an hour, while the dry forms of eczema will be controlled by sulphide of calcium, one granule being required every half-hour. The activity with which medication is carried out has a decided bearing upon the duration of a disease of this kind. Timid treatment serves only to prolong the disease indefinitely, and compels the physician to be constantly changing his remedies with no advantage to any one. A recently observed case has convinced the author of the necessity of observing these principles, which are the exact principles of dosimetry. The case was that of a child fourteen months old, who was suffering with eczema of the face, for which six granules of sulphide of calcium daily had been ordered. At the end of three weeks there had only been slight improvement. At that time the child was attacked with croup, for which one granule of sulphide of calcium was ordered hourly, this being continued for two days. At the end of that period the eczema had entirely disappeared. Thus two days of active treatment produced more effect than the previous three weeks of insufficient dosage. It is necessary to avoid gastric intolerance, and all other bad results which would compel us to interrupt the treatment; but we should not hesitate to give doses which are sufficiently large, because in this way much time will be gained, and many complications and annoyances may be avoided. The local treatment should amount to very little. It may consist of simple baths, to assist in removing the exudate; of pure vaseline, to prevent contact with the air and the deposit of substances which are suspended in the air; of starch, on account of its absorbing and refreshing qualities; of vaseline and calomel, or precipitated sulphur (ten per cent), for parasites which are accessible by external means. The use of irritating substances must be rigidly avoided, at least in those forms in which they produce active irritation.

DERMATOSES.	DOMINANT.	Parasites	Sulphide of calcium.
		Herpetic diathesis	Arseniate of soda.
		Syphilis	Biniodide of mercury.
		Arthritic diathesis	Colchicine.
		Scrofula	Iodoform.
	VARIANT.	Hyperæmia	Aconitine.
		Phlogosis	Veratrine.
		Atony	Strychnine.
		Anæmia	Arseniate of iron.
		Pains	Cicutine, morphine.
		Pruritus	Gelsemine, hydrobromate of cicutine.
		Epithelial hyperplasia	Arsenious acid.
		Ulcerations	Hypophosphite of strychnine. Phosphoric acid.

Diabetes.—More than fifty theories have been advanced to explain the pathogenesis of diabetes, which is equivalent to saying that there are at least fifty causes for it. This superfluity of hypotheses also indicates our ignorance as to the exact nature of glycosuria, and the mechanism by which one passes from health to diabetes. The theories which are based upon experimental physiology and pathology are not relevant to the question, for it is impossible to compare artificial glycosuria with diabetes, just as one can draw no conclusions from albuminuria in respect to Bright's disease. In every case glycosuria is unquestionably a constitutional disease, characterized essentially by a grave disturbance of the nutritive functions which will not lend themselves for the assimilation of glucose, or else transform into glucose the principal elements of the organism. The nervous system, which presides over acts of nutrition, preponderates among the agents which intervene to produce diabetes, and the efforts of therapeutics should converge mainly in the direction of trophic innervation. Want of equilibrium in the nutritive functions should be corrected in three ways: (1) by furnishing to the blood all the materials capable of improving its constitution; (2) by exciting, through the influence of the nervous system, the functions of assimilation; (3) by stimulating the digestive functions to activity, in such manner as to furnish for assimilation an abundance of well-elaborated material. The first indication should be filled with the arseniates of soda, potassium, and iron, two or three granules of each being given three times daily; the second, with the arseniate of strychnine and phosphoric acid, two granules being given three times daily; and the third, by quassine and pepsin, two to three granules with each meal. Saccharine and starchy articles of food should be abstained from as far as possible, so as to avoid aggravating the kidneys by the frequent passage of a thickened and abnormal urine. But to completely abandon starchy foods in order that by this means the patient may excrete less sugar, to run the risk of gravely disturbing the digestive functions and thus rapidly weaken the patient, a thing which is to be studiously avoided in all chronic diseases, but especially in those which quickly affect the nutrition, appears to the author to be a serious mistake, a confounding of glycosuria with diabetes, and a vain attempt to cure a disease by diminishing the intensity of a single one of its symptoms. It is like attempting to cure a cirrhosis of the liver by diminishing the quantity of fluids ingested, and thus expecting to relieve the ascites. It is believed that many cases of diabetes get well spontaneously, and also that the facility and frequency with which we discover glycosuria by examination of the urine have had the singular result of diminishing the gravity of the prognosis, and of attributing to hygienic treatment an efficiency which it does not really possess. In the days when diabetes was recognized only at a period in which the condition was a very bad one, recoveries never occurred; now, when one finds it in individuals who present every appearance of health, the disease is considered curable, and this fortunate result is attributed to the suspension of glycogenic substances. When the patient can no longer endure the rigid diet which is imposed upon him, an infraction of it does not seem to do him any harm. The glycosuria increases, it is true, in proportion to the quantity of sugar ingested, but the disease itself is not intensified thereby. Followers of the doctrines of Bouchardat ought for the same reasons to seek to cure diabetes by devoting their attention only to the relief of the polyuria, and to accomplish this they need only abolish water from the regimen. The patient would pass a much smaller quantity of urine, but the deprivation of fluids would only increase his sufferings. The variant in diabetes is unfortunately very limited. The complications are especially secondary diseases which appear during the period of gravity, and consequently yield with difficulty to a symptomatic treatment. The polydipsia may be relieved by codeine, three to five granules being given between meals. The polyuria is correlative with the polydipsia; the less the patient drinks the less he urinates, and the less also he suffers from the eruptions which ordinarily involve the external genital organs in this disease. The polyphagia may be satisfied as far as the digestive powers of the patient will permit. If the appetite is exceedingly voracious, we should use one to two granules of hyoscyamine two hours before each meal. Vomiting and diarrhœa should be treated, aside from precautions as to diet, by the hydrochlorate of morphine and brucine, two to three granules being given every three hours. For the constipation three to five granules of podophyllin should be given before retiring. Impotence rarely disappears until a favorable modification of the disease takes place. This is one of the symptoms for which the patient insists upon relief more earnestly than for any other, and should be treated with neurosthenics, especially with the arseniate of strychnine, two or three granules being given three times daily. The cutaneous eruptions, furuncles, erysipelas, anthrax, etc., should be treated with two granules of sulphide of calcium every two hours, and during suppuration, by two granules each of iodoform and arseniate of sodium, three or four times daily. The visceral inflammations, the most frequent of which are bronchitis and pneumonia, are always of grave significance, because they are frequently terminated by gangrene. The use of tonics should be insisted upon, especially the hypophosphite of strychnine, and the antiseptics, the salicylates of ammonia and quinine, and iodoform—two granules of each may be given every hour. We should make careful inquiry with respect to the diatheses which have been able to beget this disease, for by recognizing them important therapeutic results may be obtained. The general diseases which most frequently give rise to glycosuria are syphilis, malaria, and arthritis. For the syphilitic infection we should give five to fifteen granules of the protiodide of mercury daily, watching their effects in order to avoid mercurial salivation, which would be most undesirable. Malarial poisoning should be treated with the arseniate and salicylate of quinine, and arsenious acid—five to ten granules of the first with two of the second being given two or three times daily. The arthritic diathesis, which is one of the most common of the predisposing causes, calls for colchicine and the arseniate of soda, two granules of each being given two or three times daily.

DIABETES.	DOMINANT.	Impairment of nutrition		Arseniates of sodium, potassium, and iron.
		Depression of the nervous system		Arseniate of strychnine, phosphoric acid.
		Dyspepsia		Quassine, pepsin.
	VARIANT.	Glycosuria		Benzoate and salicylate of ammonia.
		Polyuria		Codeine.
		Polydipsia		
		Polyphagia		Hyoscyamine.
		Constipation		Podophyllin.
		Diarrhœa		Hydrochlorate of morphine.
		Vomiting		
		Impotence		Arseniate of strychnine.
		Parasitic conditions	Furuncles	Sulphide of calcium.
			Erysipelas	
			Eruptions	
		Visceral inflammations		Salicylates, iodoform.
		Gangrene		
		Arthritic diathesis		Colchicine, arseniate of sodium.
		Malarial poisoning		Arseniate and salicylate of quinine.
		Syphilis		Protiodide of mercury.

Diarrhœa.—This symptom, while it may be studied in all the diseases in which it is present, yet deserves particular attention, especially in relation to its causes. One of the most frequent causes is the imperfect elaboration of the food, whether on account of excess as to its quantity or quality, or the accentuated influence of dyspeptic conditions. Want of food may also cause diarrhœa.

Diarrhœa *a crapulâ* is cured by abstinence; diarrhœa in consequence of dyspepsia calls for appropriate treatment, the basis of which should be pepsin, two or three granules four times daily. Sedlitz Chanteaud in small doses will regulate the intestinal functions, and cause the evacuation of any undigested material which the intestines may contain. In other cases the diarrhœa is due to an excess of bile. Sedlitz Chanteaud, or mild cholagogues, by exciting the liver to disgorgement, will diminish the flow of bile, and thus destroy the efficient cause of the diarrhœa. In such cases we should give two granules of hydrastine three or four times daily, or euonymine in similar quantities. One of the most common causes of diarrhœa is vaso-motor paralysis, and the latter gives rise to this symptom in many diseases. A chill, a moral emotion, may be enough to excite it. This theory as to pathogenesis is confirmed by experimental physiology. If the nerves which are distributed to a limited portion of the intestine are cut, in a few hours this isolated portion will be filled with serum. Many varieties of congestion and inflammation have the same origin. In cases of simple paralysis of the nerves, one should give three granules of brucine every two hours, or two granules of the sulphate of strychnine every two hours. Should the inflammatory element complicate the vaso-motor trouble, it would be proper to add a granule of aconitine every two hours. Three granules of morphine every two hours, or two of narceine every hour, will also be of service, if there is pain in connection with the diarrhœa. The diarrhœal flow will be checked much more quickly if these two varieties of agents are combined. The passive congestions which are caused by interference with the portal circulation can be treated with less certainty of a cure on account of the permanence of the cause. The means which may be used with more confidence than any others are Sedlitz Chanteaud, to relieve the engorged mucous membrane, by exciting a serous discharge; strychnine, to increase the vaso-motor tonicity; and revulsives, which may be frequently repeated. The latter means have frequently given excellent results, both in cases of this kind and also in cases of chronic diarrhœa; they may be applied over different portions of the abdomen. Vesicants and the actual cautery, in points or in transcurrent lines, will prove very valuable in many cases which have resisted other forms of medication. These methods must be used with care and persistence, however, in order to obtain the desired results. The intestinal mucous membrane, which is also a very active organ of elimination, often suffers because this function is exaggerated or perverted, by reason of the nature of the substances which it is compelled to excrete. It is in this way that miasmatic infection produces diarrhœa, which can be effectively checked only by the use of sulphate of quinine, two granules of which may be given three or four times daily. The elimination of animal matter which has undergone decomposition and then absorption also takes place by way of the intestinal mucous membrane. For such a case one should prescribe three granules of the salicylate of quinine every two hours, for its antiseptic effects. The deterioration of the constituents of the blood, which gives rise to the various diatheses, is also the source of a similar elimination, which, by irritating the mucous membrane, also excites diarrhœa. The arthritic and the herpetic diatheses are the ones which most frequently give rise to this condition. In the herpetic diathesis we should give two granules of the arseniate of strychnine four times daily, and in the arthritic a similar quantity of the benzoate of soda. In all cases we should also give Sedlitz Chanteaud, which, by facilitating the intestinal and renal elimination, will aid in restoring the secretions to their normal condition. Excessive peristaltic motion may also cause diarrhœa, by the hasty manner in which its contents are propelled through the intestine. For such cases one granule of hyoscyamine or sulphate of atropine, every three hours, may produce a cure after other means have failed, by regulating the contractile power. Diarrhœa may also be excited by the presence of parasites. Such appears to be the origin of the form of diarrhœa which is prevalent in Cochin China. It is also sometimes seen as an apyretic disease among children, which fails to respond to ordinary treatment, but yields to santonine, five granules of which may be used three or four times daily. Diarrhœa in children, when it assumes the violent form known as cholera infantum, calls for energetic and immediate treatment, provided that the vital forces are not entirely prostrated, for in such a case all treatment would be useless. We need not hesitate to administer morphine to children, if the dosimetric system of treatment be followed. One half or one third of a granule may be given every two or three hours, until the therapeutic or physiological effect is obtained. After this effect has been produced, and in case the child becomes sleepy before the diarrhœa has been checked, we must seek to dissipate the narcotic effect by giving a granule of brucine or of tannic acid every three hours. The diarrhœa of nursing children is almost always dependent upon improper alimentation. Hygienic methods are the best, both for preventing the disease and its recurrence; but any intestinal derangement whatever in children of such a tender age must be checked at the beginning, for a disorder which is apparently not severe may quickly lead to a fatal termination. The regular school of practice has an arsenal with a variety of instruments for the treatment of diarrhœa; but the quantity of its arms is far from compensatory for their quality. Most of its successes are only apparent. The subnitrate of bismuth, the pulverized preparations of lime, the absorbents in general, are limited to an absorbent action upon liquid exudations, which remain, on account of this change in the consistency, at the entrance of the large intestine. If the treatment be interrupted, supposing that a cure has not taken place spontaneously, the diarrhœa will reappear, because, in reality, it has never been cured. Remedies which do not act upon the vitality are always uncertain ones. Almost the same statements may be made concerning astringents. They act in two ways: chemically, by coagulating the albumen of the intestinal contents, which are thus made less fluid in consistency, and are more easily retained; vitally, by causing contraction of the tissues, the impression being communicated to the nervous centers, from which it is sent away transformed into an increase of tonicity. Unfortunately, tannic acid and substances which contain it can not be used for very long periods, because they modify the composition of the tissues and the secretions. The perchloride of iron has given the author excellent results in diarrhœa, and in cases, too, in which other remedies had been tried in vain, like tannin; however, it should be used only in acute affections, for its prolonged use might do harm. The anexosmotics are of greater utility; but we should give up the complex preparations of these substances which are on the market, as they contain inconstant quantities of the active substance, and include, in addition, other substances which have an opposite action, or an action which offers some inconveniences. Thus, diascordium (of the Parisian Codex) not only varies on account of the uncertain composition of the opium which it contains, but also by the chemical combinations which the tannin of several of its component parts forms with its alkaloids. Laudanum, which includes such variable proportions of morphine, is measured by drops, the weight of which is also very uncertain. It is therefore not astonishing that so much fear is manifested in administering these drugs to young children, who are very sensitive, it is true, to the action of certain drugs, but who are governed, nevertheless, by the ordinary rules of vitality. Poisonous effects among them are attributed to differences in the doses of the active principle—differences which are perceptible to a less degree in large quantities of the remedy than in small ones. While the activity of morphine may be greater than of opium, it is far less dangerous to use such a substance, which is always identical and may always be measured with exactness, than another which varies constantly in its activity, and always leaves us uncertain whether we have given too much or not enough, for it is only by chance that we give just the necessary quantity of it.

DIARRHŒA.

From excess or bad quality of substances	Food		Pepsin.	
	Biliary matters		Sedlitz Chanteaud.	
Vaso-motor troubles	Nervous		Brucine, strychnine.	
	Inflammatory		Aconitine, codeine.	
From passive congestion			Sedlitz. Brucine. Revulsives.	
From the irritation caused by eliminated substances.	Miasmatic		Sulphate of quinine.	Sedlitz.
	Decomposed		Salicylate of quinine.	
	Diathetic	Herpetic	Arseniate of strychnine.	
		Arthritic	Benzoate of soda.	
From exaggerated contractility			Hyoscyamine.	
From parasites			Santonine.	

Diphtheria (*Diphtheritic Diseases, Croup, Pseudo-membranous Angina*).—Diphtheria may arise in two ways: there may be a general infection of the organism by the micrococcus of diphtheria, with subsequent localizations; or the infection may be local primarily, two conditions presenting themselves—by the first, the disease remains more or less localized, the microbes failing to infect the entire organism, owing to the absence of receptivity on the part of the organism; by the second, receptivity exists or is subsequently established, and the local disease becomes general.

The primary general infection is always the most dangerous, because the vitality of the entire economy is attacked; the purely local infection may be considered benign, because it gives us time to put the organism in a state of defense against its general diffusion. In both cases the dominant consists in the modification of the organism in such a way that it shall be an unsuitable medium for the cultivation of micrococci. The general treatment is the most important, and for that reason we should not hesitate to administer the sulphide of calcium upon the least suspicion of the invasion of the system by diphtheria. The excellence of the results will depend especially upon the opportuneness and the energy of the treatment. Opportuneness will consist in attacking the disease as soon as it appears; energy will consist in the regular administration of the proper doses until a result has been obtained. One granule of the sulphide of calcium every quarter of an hour, for infants; or two at a dose for young children, given with regularity and perseverance until a positive result is obtained. This is the only way to neutralize the infection after it has been accomplished, or is about to be accomplished.

When the patient begins to exhale sulphureted hydrogen, the medicine may be given once an hour for several hours; after which, the symptoms of sulphuric saturation having diminished, the former dosage may be resumed. In giving this medicine to children the granules may be powdered, and then placed on the child's tongue with the fingers, or with the end of a spoon. Sometimes a little sugar or a little milk must also be given. Whatever be the method of administration, it will not usually be found difficult to give this drug to children. In doses of one granule every quarter of an hour it is very well tolerated for two or three days. The child may take nourishment, and may sleep, without interrupting the regularity of the treatment. But we should not fear to awaken him if necessary, for success depends upon regularity in the treatment. Whether diphtheria be localized in the pharynx, upon the mucous membrane of the bladder, or upon any portion of the tegumentary surface, the fundamental treatment should always be the same—the sulphide of calcium. It will sometimes happen that the infection may be so pronounced, or that medical intervention may occur so late, that it will not be possible to save the patient. This is no reason for casting reproach upon the method of treatment, for no better result would have been attained by any other. We are indebted to Dr. Fontaine for the introduction of this excellent microbicide into dosimetric therapeutics. The clinical results of this treatment which have been obtained in all countries constantly tend to establish the renown which the future has in store for him. False membranes being a center for diphtheritic microbes, it is most important that they should be removed and destroyed, especially when the infection is no longer localized. Topical applications are of especial value for this purpose, and two are recommended, the properties of which are well established by the results of experience. They are pure lemon-juice and a five-per-cent solution of lactic acid, and they are the only ones which it is proper to use. Repeated applications with these substances should be made at short intervals, by means of a forceps or a small sponge attached to a long rod. In croup and pseudo-membranous angina it is sometimes necessary to give an emetic, in order to displace and expel the obstructing false membranes.

Sulphide of calcium will tend to break them up, and the topical applications to dissolve them; but, aside from this action, especially in croup, it is absolutely necessary in certain cases to excite vomiting in order to effect the complete expulsion of the membranes. This is only an exceptional means of treatment, however, and it would be bad practice to use it generally. In order that the emetics may have good effect the membranes must be partly detached from the tissues which they cover, otherwise the vomiting must be repeated, at the cost of great fatigue to the patient. If the emetic fails to produce vomiting the effect is even worse, for in that case, being absorbed, it tends to aggravate the collapse into which the patient has fallen. For an emetic, three granules of emetine, dissolved in a teaspoonful of warm water, may be given every five minutes until the desired result is obtained. To assist in producing the effect the palate may be tickled, or we may give, in addition, one granule of *emetic*, also at intervals of five minutes. These means should be used with great caution, and only in those cases in which their use is clearly indicated.

Spasm of the muscles of the glottis is sometimes the principal cause of the dyspnœa. In such cases we should give half a granule or a granule of hyoscyamine every half-hour, regulating its administration by the state of the pupils—that is to say, suspending it when the iris is well dilated. Paralysis of the muscles of the glottis calls for one granule of brucine every hour, in the less acute cases, or every quarter of an hour, if a very prompt effect is desired. Adynamia, which may be so quickly established, especially if emetics have been injudiciously used, may be treated with one granule of brucine every two hours. For children over three years of age arseniate of strychnine may be substituted for the brucine. When asphyxia is imminent, as a last resort for improving the respiration, tracheotomy must be performed. The result is always doubtful, but it may bring relief. The paralyses which follow the disease may be treated with two to six granules of the hypophosphite of strychnine daily, according to the age of the child. The fever may be almost neglected, as an element of secondary importance in this disease. It is usually neither very high nor of sufficiently long duration to greatly enfeeble the patient. It is better to concentrate one's entire attention upon the infective element of the disease; besides, a defervescent action accompanies the effect of the parasiticide. Should the temperature reach 40° C., we may give three granules of veratrine every half-hour, if we wish to obtain an emetic effect, or one granule if we seek only the antithermic effect. Two granules of the hydroferrocyanate of quinine may be given every half-hour, if the febrile movement should proceed by intermittent paroxysms.

DIPHTHERIA.	DOMINANT.	Infectious element Diphtheritic micrococcus		Sulphide of calcium.
	VARIANT.	Obstruction by membranes		Topical solvents. Emetic. Emetine.
		Spasm of the glottic muscles		Hyoscyamine.
		Paralysis of the glottic muscles		Brucine.
		Adynamia		Arseniate of strychnine.
		Imminent asphyxia		Tracheotomy.
		Fever	Continued	Veratrine.
			Intermittent	Hydroferrocyanate of quinine.
		Subsequent paralyses		Hypophosphite of strychnine.

Disease, Addison's.—Jaccoud announces the pathogenesis of Addison's disease in the following manner: "Pathological anatomy and pathogenic interpretation make it evident that the clinical phenomena of Addison's disease take their point of departure from an abnormal excitation of the abdominal sympathetic plexuses, the semilunar ganglia, and the trophic nerves which originate there. This excitation is the result of a morbid process which is anatomically appreciable, which may involve the suprarenal capsules, under the form of a sclerosis or a caseous inflammation; or the semilunar ganglia under the form of sclerosis, an essentially irritative process. According to its initial center we have, as a result of the excitation, which acts by radiation and by reflex action, gastric, hypochondriac, intestinal, or lumbar pains, vomiting, nausea (the gastric, hepatic, or mesenteric plexuses being involved), palpitations, and syncope (from the involvement of the semilunar and thoracic ganglia); and, since the sympathetic draws its activity from the cerebro-spinal center, incessant calls of this character, to keep up the abnormal state of excitation, break down the central apparatus, and diminish the activity of the functions which are dependent upon it. From this results the profound asthenia, which is inevitably fatal, notwithstanding the absence of any notable emaciation. With regard to the dark color of the skin in this disease—the melanodermia, as it is appropriately called—it should not be attributed to an alteration of the pigment in the blood; it is due rather to a hypergenesis, to a pigmentary change which is caused by excitation of the trophic nerves.

The indication for the dominant is, therefore, to attack the principal dynamic lesion—i. e., the nervous excitation—and the most important material lesion, which consists in the trophic modifications of the suprarenal capsules, the nervous ganglia, and the nerves themselves, which have undergone degeneration. With one granule of hyoscyamine every three hours, combined with three of iodoform, this double indication may be filled. The asthenia which results from this constant excitation is the manifestation of the want of equilibrium in the vital motion. In order to supplement the deficient vitality of the cerebro-spinal system, we should give two granules of the arseniate of strychnine or of phosphoric acid every two hours. The lipothymia and syncopes, which are the result of nervous asystole, or of fatty degeneration, call for caffeine or guaranine, dynamophoric substances, which act as a tonic without producing excitement. Three granules may be used every quarter of an hour until an effect is produced.

If the nausea and vomiting do not yield to the action of the dominant, quassine may be given in two-granule doses every half-hour. Epigastralgia and lumbo-abdominal pains may be assuaged by the hydrobromate of cicutine, the tannate of cannabine, or croton chloral, three granules to be given every quarter of an hour until a sedative effect is obtained. The melanodermia, by which the skin, however white it may be naturally, is colored as dark as that of a mulatto, may be treated with arsenious acid, care being taken that the pigmentary hypergenesis be not increased by the efforts to diminish it. Two granules of it may be given three to five times daily.

ADDISON'S DISEASE.	DOMINANT.	Excitation of the abdominal sympathetic plexuses	Hyoscyamine, iodoform.
	VARIANT.	Asthenia	Arseniate of strychnine.
		Lipothymia	Caffeine, guaranine.
		Vomiting	Quassine.
		Epigastralgia Lumbo-abdominal pains	Hydrobromate of cicutine.
		Melanodermia	Arsenious acid.

Diseases, Tuberculous.—Little can be said in regard to the means of combating this class of diseases. Their pathogenesis is still uncertain, notwithstanding the discovery of Koch's bacillus. It is difficult to believe that in hereditary phthisis, for example, the germ is preserved in a lethargic condition for fifteen, twenty, thirty, or more years, being perfectly tolerated by the organism until certain particular conditions suddenly excite it to fatal activity. It is easy enough to believe that the bacillus is capable of producing tuberculosis, and to admit that local forms of tuberculosis have no other origin; but, with respect to pulmonary phthisis, it would appear that there must be a precedent disease of the lungs in order that the bacillus might develop—an atonic condition of the pneumogastric nerve, which should constitute more than a simple predisposition, and should become a true hyposthenic neurosis. At least such would seem to be the condition in the majority of cases. The constitutional weakness, greatest in the organs of least resistance, produces a diminution in the energy of the trophic functions. Then the first period of phthisis is established—the period of pulmonary adynamia. It may be that, at this time, the bacilli, finding a soil which is suitable for their germination, attack the respiratory organs, and become the principal cause of different symptoms, aiding in hastening the progress of the disease. It is not an agreeable thing to admit, however, that the bacilli find material for their nourishment and development in the lungs, the vitality of which is unimpaired. For this reason predisposition should receive the first place among the efficient causes, infection from bacilli being placed second. The dominant should, therefore, consist in the use of the most powerful neurosthenic agents, both of a hygienic and a pharmaceutical character. Under the first of these heads may be mentioned superalimentation, a cold, dry climate, gymnastics, hydrotherapy, etc.; among the second, the arseniate of strychnine and phosphoric acid, or arsenious acid and the hypophosphite of strychnine. By alternating the two latter combinations, we may avoid the inconveniences which attend the too prolonged use of the same medicaments, for it must be realized that this treatment should be followed up with perseverance and without interruption.

There is no middle ground, the disease will not capitulate; either it must die or it will kill the patient. The doses should be gradually increased, two granules of each substance being given at first three times daily, and this quantity being increased according to the indications, without any fear of an accumulation, which is never seen, in fact, not even if doses which are apparently exaggerated are administered. This treatment may be continued indefinitely; in fact, its principal advantage consists in so doing. It is entirely useless to experiment with any form of treatment or alimentation, however much hope it may give us, if it can only be followed out during a more or less limited period. The advantage which may be gained from it is ephemeral, and is compensated inversely by the loss of ground which follows these attempts and leaves the patient in a worse state than before. This has been the history of all those specifics which have been praised immeasurably, and have gone out of fashion again almost as soon as they came in. The same is true of cod-liver oil and other indigestible or nauseating foods which are badly tolerated.

The treatment of the hyposthenic condition should be continued uninterruptedly for years, until the patient has entirely recovered his health. It would also seem advisable to proscribe and severely condemn all the forms of depressing, defervescent, contrastimulant treatment, etc., which may modify some of the symptoms for the time, but can never be of any real advantage to the patient. The fever and the element of infection, in spite of their pathological importance, should be treated in a very different manner from that which has been advised in other diseases. Suppose that all the bacilli have been destroyed. Shall we have gained anything by this means? No, for the predisposition remains the same, and a second invasion would be more easily made than the first. The principal indication is to overcome pulmonary atony. This point having been gained, the bacilli will die, finding no longer a suitable soil, and new bacilli will no longer be able to establish their colonies. Therefore defervescents and bacillicides are to be objected to as harmful unless it be at the beginning of the disease, when the local adynamia can still be easily modified, and the paroxysms of fever are not yet continuous. We should therefore prescribe at the beginning of the disease two granules of aconitine and two of digitaline, three or four times daily, to moderate the fever; as a parasiticide we should give two granules of the sulphide of calcium every hour, if this quantity does not disturb the patient's stomach nor interfere with his sleep. Impairment of nutrition must be carefully treated with those forms of medicinal food which are best tolerated. The phosphates of lime and of iron, the phosphide of zinc, the arseniates and hypophosphites of lime and soda, separately or in combination, will satisfy this requirement. Paroxysms of intermittent fever should be combated with small doses of the hydroferrocyanate or the salicylate of quinine, three granules at a dose being given three or four times daily. Profuse sweating, which annoys and weakens so many patients, may be profitably treated with atropine or one of its salts (the sulphate or the valerianate). Two granules might be given when one retires, and the dose might be repeated when one became conscious that a sweat was coming on. The choice of the salts of atropine must be changed from time to time, to prevent habituation, or agaricine might be substituted for atropine, five to ten granules being given two or three times every night. The diarrhœa which results from the condition of the digestive passages may be relieved by the use of two granules of quassine and two of pepsin with each meal. If the diarrhœa is due to intestinal ulcerations, it will be relieved with difficulty. Two granules of the hydrochlorates of morphine and of cotoine may be tried every hour, or every two hours, according to the resistance of the symptoms and the other conditions of the patient. For the hæmorrhages or hæmoptyses, five granules of ergotine may be given every quarter of an hour until a hæmostatic effect is produced. Three granules of veratrine dissolved in a teaspoonful of water, and given every ten minutes, may serve the same end, the dose being repeated until a hæmostatic or a contrastimulant effect is obtained. This drug (veratrine) is only suitable, however, for patients who are still strong, for florid phthisical subjects, and for those who resist other means of treatment. It may be added that iodoform is an excellent remedy for this disease, if it can be tolerated. It may be given in doses of three granules every two hours. Its function is to disinfect the expired air and to quiet the cough. Helenine may be found useful as an expectorant, two to five granules being given three to five times daily. For the fatiguing cough, the neuralgias, and the insomnia, the salts of morphine, cicutine, and cannabine may be given. The pains which accompany the disease may be treated with one granule of hyoscyamus every three hours, while the vomiting may be checked by combining the hyoscyamine with strychnine. Little more need be said in respect to this disease, which is the least satisfactory of all diseases as to its treatment

—whether in practice or in theory. This feeling of repugnance is justified by the unhappy result which almost invariably occurs, though it is still the physician's duty to struggle with it to the end, without giving way to despair. Cases of positive cure which have occurred in all stages of phthisis demand perseverance in treatment, and justify the hope of a satisfactory result. It is for these reasons that we should prevent, as far as possible, the severe consequences which almost always follow pulmonary inflammations of greater or less extent, and not limit ourselves to fighting with the existing disease. These morbid intercurrences should be met and cut short on account of the great importance which they have in respect to the development of the disease.

TUBERCULOUS DISEASES.	DOMINANT.	Impaired nutrition .	Arsenious acid. Phosphates.
		Pulmonary adynamia	Arseniate of strychnine. Phosphoric acid. Hypophosphite of strychnine.
	VARIANT.	Bacillar infection .	Sulphide of calcium. Iodoform.
		Hæmorrhages . .	Ergotine. Veratrine.
		Nocturnal sweating .	Atropine. Agaricine.
		Diarrhœa . . .	Pepsin. Agaricine. Cotoine.
		Fever . . .	Digitaline, aconitine. Salicylate and hydroferrocyanate of quinine.
		Cough . . .	Iodoform, morphine, helenine.
		Neuralgia . .	Tannate of cannabine. Hyoscyamine, Gregory's salt.

Dysentery.—Science has not yet found out the real cause of dysentery. With some individuals it is simply an inflammatory affection; with others it is the result of parasitic infection, and is due to particular forms of bacteria. The progress of the disease, its contagiousness, the constancy of certain accordant causes in all cases, tend to confirm the second theory. Dysentery appears to be localized primarily in the colon, whence it extends to the small intestine, the liver, the lungs, etc., gradually involving the entire organism, which is apparently suffering from a slow and progressive intoxication. The dominant should, therefore, be chosen from the parasiticides. But, considering the results of treatment with the standard remedies in classical practice—that is, such remedies as ipecac and calomel—it would appear that the best means of antiparasitic treatment is furnished by the organism itself in the shape of the bile. In fact, at the very beginning of the disease, as soon as the bile comes in contact with the surface of the colon, the disease is usually checked, and a cure is announced by the presence of the bile in the intestinal evacuations. Cholagogues should therefore occupy a predominant position in the list of remedies. The excellence of the results which have been obtained by ipecac, as well in temperate as in tropical climates—the drug itself, and the method of its use in this disease, having been brought to us from tropical climates—should induce us to use it by means of its alkaloid emetine as the principal means of treatment. It must be conceded that it has a specific action, the exact method of which is not known, though it evidently operates particularly upon the liver and the nerves, which are distributed in the abdominal viscera. As to the frequency of dosage which is required, the tolerance of the stomach must be consulted. If there is a tendency to vomit, we should administer one granule every two hours, and, if there is still nausea, we should combine with each dose two granules of codeine. If the stomach will allow it, we should give two granules of emetine every hour until there is a manifest remission of the symptoms. The spasmodic element, which almost always accompanies the pathogenic element, requires the combination of hyoscyamine with emetine, and thus the therapeutic effect of the latter will be more rapidly obtained. If the emetine can not be borne at all, five granules of calomel may be given every hour. Cotoine may also be tried, but with these three remedies the dominant indication can usually be satisfied. It must not be forgotten that the case is always sufficiently urgent to institute an active and systematic treatment, whatever be the apparent or real benignity of the disease at its beginning. There is no question but that the stages of dysentery succeed each other regularly, and that one comes in contact with the last only in those cases in which the first have not been treated according to proper rules. But, while the disease is readily curable in its early periods, it is very rebellious in the later ones, because the means which are intended to overcome the morbid principle can not accomplish it, because the lesions have extended greatly, have gained in significance, have multiplied, and because there are secondary complications which have their seat in the parts which are most subject to vital depression, which lead to adynamia, to gangrene, and to death. When the disease begins we may treat the acholia with Sedlitz Chanteaud, but not with such persistence as to increase the debility of the patient. If there is high fever, and it is usually of a remittent or an intermittent type, it may be moderated by the use of aconitine, while the hydroferrocyanate of quinine may be used to arrest the periodic character of the paroxysms. The aconitine may be given in doses of one granule every hour or every half-hour, according to the temperature; the quinine in three-granule doses every hour during the remissions, the use of the aconitine being resumed when the temperature again becomes elevated. The vomiting, which, as has been observed, may compel a modification of the treatment, and is also the cause of the great physical prostration which is experienced by sufferers with dysentery, may be treated with codeine, Sedlitz Chanteaud having first been given. The codeine should be given in doses of two granules every quarter of an hour, and, besides checking the vomiting, it will also soothe the abdominal pain, which is sometimes almost unbearable if narcotics are omitted. The adynamia, which is sometimes manifested from the very beginning of the disease, may be anticipated or relieved, if it has actually occurred, by one or two granules of sulphate of strychnine given every two hours. Tenesmus, which is a great source of suffering, and which quickly reduces the vital forces, may be treated with one granule of hyoscyamine every half-hour until relief is obtained. Should the physiological effects of hyoscyamine or its congeners, atropine or daturine, be manifested before the therapeutic effects, its administration must be interrupted, but not abandoned, two granules of gelsemine being substituted for the time every half-hour. The rectal hæmorrhages, which do not proceed from exudations, but from ulcerated vessels, often constitute an annoying element in the disease, because they increase the weakness which is already sufficiently pronounced from other causes. These hæmorrhages should be treated by means of three granules of ergotine every hour, without suspending the other medicaments. Ataxia and delirium call for the use of the bromide of camphor, the sedative and antispasmodic properties of which will aid the dominant treatment. Two or three granules may be given every two hours or oftener, as the case demands. In some cases pains, which resemble those of rheumatism, are present, and should be treated by the bromide of camphor, for they are almost always the result of spasmodic contractions; at other times the pains are actually rheumatic, and therefore demand the use of colchicine, the cholagogue properties of which are thus added to the treatment of the dominant. One granule may be given every two hours. The suppuration in the cellular tissue which surrounds the colon or the rectum is a dangerous consequence of ulcerations in the mucous membrane, and should be treated persistently with iodoform and arseniate of soda. Two granules of each may be given three or four times daily. The paralysis of the sphincter ani and the permanent prolapse of the rectum should be treated with excitomotor agents for a long time. The hypophosphite of strychnine is to be preferred, six to eight granules being given daily. The icterus which attends the first stages of the disease calls for no particular or immediate treatment. Should it persist after the dysentery has been controlled, colchicine combined with the arseniate of quinine may be used, two granules of each being given three or four times daily. Dysentery often appears in such a manner that the clinician is compelled to regard it as a manifestation of malarial infection. In such cases nothing can control it more effectually than ten granules of the salicylate of quinine every three hours.

Gangrene, whether manifested in the rectum or in remote organs, should be treated with disinfectant remedies locally (for example, injections of a borated solution of chloral, Hebert's formula for which is the following:

Chloral hydrate	10	grammes.
Borax	5	"
Aquæ	250	"

Sig.: Dissolve a tablespoonful to a glass of water), while internally two granules of salicylate of ammonia may be given every hour. Chronic dysentery may be regarded as a simple catarrhal inflammation. Treatment should be directed to the inflammation of the mucous membrane, and two granules of aconitine and two of the arseniate of soda may be given three times daily. If there is tenesmus, we should give as a variant one granule of hyoscyamine and one of emetine every two or three hours. The diet should be tonic but not stimulating, and may include rare meats, milk, and albuminous fluids. The patients should not be debilitated by depletive means, such as leeches, etc. Dysentery may be regarded as the cholera of the large intestine; a very slight weakening of the physical forces may prove an insurmountable obstacle to a cure.

DYSENTERY.	DOMINANT.	Parasitic element	Emetine.
	VARIANT.	Acholia	Sedlitz, calomel.
		Fever	Aconitine. Hydroferrocyanate of quinine.
		Vomiting	Codeine.
		Pain	
		Adynamia	Sulphate of strychnine.
		Tenesmus	Hyoscyamine, gelsemine.
		Hæmorrhage	Ergotine.
		Ataxia	Bromide of camphor.
		Delirium	
		Rheumatoid pain	Colchicine.
		Perityphlitis	Iodoform, arseniate of soda.
		Periproctitis	
		Paralysis of the sphincter ani	Hypophosphite of strychnine.
		Icterus	Colchicine, arseniate of strychnine.
		Malaria	Salicylate of quinine.
		Gangrene	Salicylate of ammonia. Antiseptic injections.
		Chronic stage	Aconitine, arseniate of soda. Emetine, hyoscyamine.

Dysmenorrhœa.—Difficulty in the expulsion of the menstrual products may arise from various causes, which must be carefully studied and understood in order to establish a rational and efficacious plan of treatment. The obstacle may be either dynamic or organic. In the first condition there is a spasm of the neck of the uterus, analogous to the spasmodic contraction of the neck of the bladder. In the second condition there is equal difficulty in disposing of the menstrual fluid, but the cause is different. At one time it may be due to an obstruction in the cervical canal, consisting of mucus, etc.; at another, the obstruction may consist of a tumor of different characters; at another, in the presence of coagula or the *débris* of mucous membrane which have not been discharged. Spasmodic dysmenorrhœa is the form which yields most readily to treatment. One granule of atropine or daturine given every half-hour during the paroxysms of pain will allay them, and permit the free passage of the catamenial flow. In the intermenstrual periods one granule of the sulphate of atropine and one of the sulphate of strychnine may be given three times daily. If the obstacle is due to congestion or inflammation of the mucous membrane, its engorged condition producing a stricture of the canal, we should use, during the intermenstrual period, two granules of aconitine three times daily. If the canals concerned in menstruation are normal in caliber, and the difficulty arises from the quality of the secretions, we should give ergotine to assist the uterus in expelling the body which it contains, and hyoscyamine to overcome the cervical spasm, which almost always accompanies the exaggerated irritability of the body of the uterus after that organ has vainly attempted to empty its cavity. Stricture, whether cicatricial, congenital, or organic, should be treated by gradual dilatation. For endometritis, with its abnormal discharges, we should use for a long period iodoform, arseniate of iron, hydrotherapeutics, revulsives, etc. The same treatment applies for membranous dysmenorrhœa. Uterine colic, which is sometimes excessively painful, should be treated with one granule of hyoscyamine every quarter of an hour, or two granules of tannate of cannabine every quarter of an hour. Dysmenorrhœa, which is caused by the presence of foreign bodies in the uterus, by polypi, or other tumors, must be treated by surgical means, with reference to its cause. During the menstrual crisis we should help the general condition (indirectly) by giving strychnine, which will strengthen the contractile force of the body of the uterus, and hyoscyamine, which will facilitate the dilatation of the neck. This will not cure the disease nor destroy its cause, but it will make the expulsive action of the uterus as effective as possible.

DYSMENORRHŒA.	DOMINANT.	Spasmodic dysmenorrhœa	Daturine.
		Congestive dysmenorrhœa	Aconitine.
		Inflammatory dysmenorrhœa	
		Atonic dysmenorrhœa	Ergotine.
	VARIANT.	Stricture of the cervix	Gradual dilatation.
		Endometritis	Iodoform, arseniate of iron.
		Colic	Tannate of cannabine.
		Foreign bodies and tumors	Surgical means.

Dyspepsia.—Dyspepsia is a disturbance of one or of several of the functional acts which contribute to effect normal digestion. This complex digestive function is subject to different causes, which require a hygienic and pharmaceutical treatment, varying according to the case. With some, all that is required in the way of treatment is a slight modification in the way of diet, or perhaps only a greater degree of care in mastication; with others, there must be the combined influence of several different means, hydrotherapy, electricity, nervines, eupeptics, etc., in order to effect a cure. The physical, chemical, and mechanical acts which are necessary for the transformation of food into absorbable material begin in the buccal cavity, are continued in the stomach, and are terminated in the intestine; and, as dyspepsia may be established in any one of these cavities, therapeutics must consider buccal, stomachal, and intestinal forms of dyspepsia. Buccal dyspepsia is caused by imperfect mastication, by loss of the teeth, or by a diminution in the ptyalin or diastase which is secreted by the salivary glands, and the object of which is to convert starchy matters into glucose. Mastication should therefore continue for a certain length of time, especially if the teeth are absent or imperfect, not only that the mechanical division of the food may be properly accomplished, but also that the starchy matters may be impregnated with saliva, and be transformed (to a greater or less degree) into dextrine and then into glucose. Diastase is especially useful, therefore, in buccal dyspepsia, to supplement the natural ptyalin. Having been artificially supplied to the stomach, it digests the starches which it finds there, which without this ferment would remain in the stomach like foreign bodies, unaffected by the gastric fluids. Three granules of it may be used with each meal in which starchy substances form a portion. Diastase is not a true medicament for conditions like this, for it does not produce any curative dynamic modification.

Its role is limited to the production of an artificial digestion. To increase the salivary secretion we should use the nitrate of pilocarpine, which excites both the internal and external glands of the tegument to action. Three granules of it should be used two hours before each meal. The gastric form of dyspepsia is due to lesions affecting contractility, secretion, or innervation. The muscular tunic of the stomach may be so affected that its peristaltic movements become very weak. The result of this will be that the food in the stomach is not sufficiently impregnated with gastric juice, and that chymification takes place too slowly. Then the stomach is gradually dilated by the gases which are generated in it, its atonic condition becoming more and more pronounced. Such is the pathogenesis of flatulent dyspepsia and of gastric dilatation in its simplest form. The effective agents in the treatment of this form of dyspepsia are those which will restore to the organ the energy of contractility which it lacks. Such are the sulphate of strychnine, of which one to three granules may be given before meals; euonymine or elaterine, five granules at a dose; brucine, two to three granules; hydrotherapy, electricity, massage, etc. Indirectly we may attain the same result by diminishing the work of the stomach by a proper selection of food, by reducing the quantity which is taken, and by giving preference to those which are fluid or semi-solid, which offer less resistance to the functional action of the stomach. It is also desirable that plenty of time should be allowed for the meals, and both pepsin and diastase administered with the meals, that digestion may be accomplished as rapidly as possible. The regimen should be adapted to the capabilities of the stomach, but at the same time the strength of the system at large must not be interfered with. Upon this theory is established the method of washing out the stomach with Fancher's tube, and artificial feeding by the same means, which has given excellent results in cases of gastric dilatation. In other cases the contractile power of the stomach is exaggerated, and as a result the patient suffers from vomiting and eructations. This frequently occurs during the first months of pregnancy. The so-called *uncontrollable* vomiting will almost always yield to the influence of two granules of hyoscyamine combined with one of sulphate of strychnine, which, by restoring the physiological equilibrium, will readily dissipate the spasmodic condition which is the cause of the vomiting. The stomach has two varieties of glands. In one of them is secreted the gastric juice, which contains the pepsin which is indispensable for the conversion of nitrogenized substances into peptone; the others secrete mucus, and by their situation seem to be intended to facilitate the passage of the bolus of food through the pylorus. The quantity of pepsin which is contained in the gastric juice may be too small to effect a prompt peptonization of the proteids with which it comes in contact, which consequently remain in the stomach and undergo decomposition, the existence of which is announced by the liberation of offensive gases, and by diarrhœal discharges which contain undigested food. For this form of dyspepsia, which has the name of *putrid dyspepsia*, two or three granules of pepsin may be given with each meal, and two drops of hydrochloric acid in a glass of water after meals. The treatment may be completed by the use of peptones, of meat powder, of food in general which is not highly nitrogenous, of milk, and, as antiferments, three granules of salicylate of quinine and two of iodoform. If the passage of imperfectly digested food through the alimentary canal causes colic, three granules of codeine may be administered after each meal, or three of cocaine with each meal, the dynamophoric and antidyspeptic properties of this drug being very valuable. The vomiting is due to indigestion, and the principal remedy is still pepsin. If the slow effects of this substance can not be waited for, sulphate of atropine may be substituted, one granule being used every half-hour until the proper effect is produced. Hyoscyamine and atropine tend to destroy the appetite and to increase the lingual catarrh; but these are transient effects, and, after they have disappeared, they leave the patient in a better condition than he was before the use of the mydriatic alkaloids. If the quantity of pepsin in the gastric juice is excessive, symptoms of acid dyspepsia are apparent. This excess may be remedied by the use of two granules of the arseniate of soda and two of the salicylate of soda with each meal, and alkaline mineral waters. Pyrosis may be treated by the same means, and cardialgia by three granules of cicutine after each meal. The treatment of acid dyspepsia may be completed by proper exercise, including stimulation of the sweat-glands, three granules of the carbonate of lithia three times daily, and abstinence from all stimulants. An exaggerated secretion from the mucous glands of the stomach causes *pituitary dyspepsia.* It should be treated with the bitters, especially quassine, in doses of two to five granules three times daily, and two to three granules of brucine. A proper dietetic regimen should also be determined upon, and rigorously carried out. Condiments and alcoholic liquors should be avoided, and either a diet of milk or the grape-cure will be found to be serviceable. Disturbances in the gastric innervation will give rise to gastrodynia, which is the characteristic feature of *gastralgic dyspepsia.* In its treatment, three granules of the tannate of cannabine or of the hydrobromate of morphine may be used, combined with one granule of hyoscyamine or three of codeine, and repeated as often as the pain requires. Under the head of those classes of dyspepsia may also be placed diminution of the appetite, or anorexia; excess of the same, or boulimia; and perversion, or heterophagia. Anorexia requires different treatment, according to its cause. Generally the appetite may be excited by the use of two granules of quassine or two of piperine before eating. Two or three granules of veratrine, three times daily, will almost always have a similar effect. Boulimia may be relieved by one granule of atropine every three hours, or three granules of morphine every half-hour until the voracious character of the appetite is overcome. Heterophagia, which is also known as pica or malacia, requires a severe hygienic regimen and the use of one granule of hyoscyamine, combined with one of strychnine, two hours before eating. Such are the means for treating these well-defined forms of dyspepsia. Unfortunately, they rarely appear singly, and the symptoms which are associated with them result in the manifestation of very complex conditions. It is therefore necessary to combine different agents in treating them, and to select the most important among the phenomena for successive treatment, in the order of their gravity and their affiliation. Sedlitz Chanteaud should form an essential portion of the treatment of almost all forms of dyspepsia. It is indispensable for relieving the alimentary canal of portions of undigested food, which would become sources of renewed trouble if allowed to remain. It also acts by virtue of its alkaline properties, and enables one to dispense with the alkaline mineral waters. The hygienic and alimentary regimen, regulated in accordance with the agencies which have brought about the dyspepsia, is also deserving of careful consideration. Indications of this kind occupy almost the entire attention of the most celebrated physicians of the official school. Experience taught them that Galenic preparations were harmful, not only because they annoyed the patient, but because of the difficulty which the stomach experienced in digesting insoluble and irritating substances. Such substances almost always exaggerated the disease; or, if they did not, they were taken with a sense of horror by the patient, who was also compelled to persevere in their use for a long time. Such treatment bears no resemblance to that which consists in the use of alkaloids. Under this system the granules are taken with the greatest facility, and without the slightest repugnance. They are readily dissolved when they come in contact with the mucous membrane, and are absorbed in a few minutes without effort and without fatigue. The triumph of dosimetry in chronic diseases is never so manifest as in diseases of the alimentary canal. Intestinal dyspepsia might also be considered, but the indications which pertain to it are almost always those of gastric dyspepsia. Pepsin and diastase in combination should be prescribed for it, and the biliary secretion should be stimulated by the use of cholagogues, which have a tonic action upon the intestine — such as jalapine, colocynthine, elaterine, and iridine—three or four granules being given with each meal.

DYSPEPSIA.

1st. Buccal.

Mechanical troubles	Prolonged medication.
Deficiency of ptyalin	Diastase, nitrate of pilocarpine.

2d. Stomachal.

Lesions of Contractility.

Atony . .	Flatulent dyspepsia .	Sulphate of strychnine. Quassine.
	Dilatation . . .	Euonymine, hydrotherapy, electricity.
Spasm . .	Vomiting . . . Eructations . . .	Hyoscyamine, strychnine.

Lesions of Secretion.

Diminution of pepsin	Apepsia . .	Pepsin, hydrochloric acid.
	Foul eructations	Iodoform, salicylate of quinine.
Putrid dyspepsia .	Enteralgia . .	Codeine.
	Vomiting . .	Sulphate of atropine.
Increase of pepsin . (Acid dyspepsia.)	Pyrosis . .	Arseniate of soda, carbonate of lithia.
	Cardialgia . .	Cicutine, cocaine.
Increase in the secretion of mucus . . (Pituitary dyspepsia.)		Quassine, brucine.
Vomiting		

Lesions of Innervation.

Pain (gastralgic dyspepsia)	Hydrobromate of morphine, hyoscyamine.
Anorexia	Quassine, piperine, veratrine.
Boulimia	Atropine, hydrochlorate of morphine.
Heterophagia	Strychnine, hyoscyamine.

3d. INTESTINAL.

Deficiency of pancreatin	Diastase, pepsin.
Deficiency of bile	Iridine, colocynthine, elaterine.
Intestinal atony	Jalapine, brucine.

Emphysema, Pulmonary.—After emphysema has been established, whatever be its cause, it will be impossible to cure it entirely. It belongs to that class of irreparable lesions for which treatment can only ameliorate this or that symptom. But, as such lesions are generally progressive, we should aim at a plan of treatment which will prevent or retard development, as far as possible, and delay the time when the condition will be incompatible with life. If we can not hope that the alveoli, after their forcible dilatation, will recover the resisting power which they have lost, we can at least increase the resisting power of those which are still uninjured. Notwithstanding the incurability of the disease, there is still a dominant indication, which is to fortify the resisting power of the pulmonary tissue. This will be accomplished by the use of the hypophosphite of strychnine during the entire duration of the disease; two granules should be given three to five times daily. The variant should endeavor to remedy the venous stasis, by increasing the cardiac contractility by the use of three granules of caffeine every two hours; to this two granules of the arseniate of strychnine may be added every hour when the circulatory disturbances make the condition one of danger. Dyspnœa is the fatal consequence of emphysema; suffocation may be temporarily relieved by the use of revulsives. Palpitations, which are the expression of cardiac troubles resulting from interference in the regular course of the blood-current, demand digitaline in order that the action of the heart may be more regular and vigorous; two granules may be given two or three times daily.

The catarrh, which is the result of stasis and subsequent paralysis, may be relieved for a time with large doses of ergotine; three to five granules may be given every hour. The cough should be effectively treated, not only because it is a source of great discomfort to the patient, but also on account of the bad effect which it has upon the progress of the emphysema; all muscular effort tending to make this condition rapidly worse. For this purpose the most useful agent will be morphine, either the hydrochlorate, the hydrobromate, or the hydriodate being used; and this will not only greatly diminish the number of attacks of cough, but by its tonic action upon the cardio-pulmonary functions will assist the other medicaments in arresting the development of the emphysema.

EMPHYSEMA.	DOMINANT.	Atony of the pulmonary tissue	Strychnine.
	VARIANT.	Venous stasis	Caffeine.
		Dyspnœa	Apomorphine.
		Palpitations	Digitaline.
		Catarrh	Ergotine.
		Cough	Morphine.

Encephalitis, Acute.—Acute encephalitis is almost always consecutive to inflammatory lesions of organs which bear more or less intimate relations with the brain. The most frequent of such lesions is otitis, especially if the otorrhœal discharge does not find a ready exit externally. Acute encephalitis should be thoroughly treated with aconitine, and with the greater activity as its use is begun near the starting-point of the disease, and as the general symptoms are the more acute. The congestions which are established around the inflammatory center, which are the cause of the extension of the disease, and give rise to many symptoms, should be perseveringly treated, if we desire to prevent that aggravation of the disease which occurs in the majority of cases. The frequent repetition of these hyperæmic conditions may be prevented, as far as is possible, by the combination of cocaine with aconitine, two granules of each being given three or four times daily. The cephalalgia, when it is simply congestive, will disappear under the use of two granules of caffeine every half-hour, but if it is associated with suppurative inflammation we should use codeine, narceine, or the tannate of cannabine in two-granule doses every half-hour until relief is obtained. The vertigo may be due to a variety of causes, but is most frequently associated with disorders of the circulation and with intracranial pressure. This symptom will almost always yield to the valerianate of atropine in doses of one granule every two hours. Disorders of vision and hearing, convulsions and contractures, will be relieved, if they are susceptible of relief, by one granule of hyoscyamine every half-hour. Delirium may result from disorganization of the nervous tissue, or from irregularities in the circulation of the blood. If from the latter of these two causes, we should give one granule of digitaline and one of aconitine every two hours.

Different forms of paralysis attend this condition, some of which are curable, while others are not. But, as the curable can be differentiated from the non-curable only by the fact of their disappearance, we should persevere in efforts to facilitate the return of motion. Two or three granules of brucine may be given three or four times daily, to fulfill this indication. The fever, which is the measure of the severity of this condition, should always be treated with defervescents until the desired result is obtained. Such agents should consist of a combination of veratrine, aconitine, digitaline, and the hydrobromate of quinine, in doses which are repeated with sufficient frequency to control the hyperthermia. Constipation, which is very common in encephalitis, may be modified by the regular use of three to five granules of podophyllin every night, with Sedlitz Chanteaud in the morning if necessary. Retention of urine, which is almost always due to spasm of the vesical sphincter, may be relieved by one granule of daturine every two hours. In almost all cases strychnine must be combined with it to overcome the spasmodic condition, two granules of the sulphate being given with each dose of daturine. Vomiting may be relieved by a combination of two or three granules of codeine with an equal quantity of quassine every half-hour. If these means should prove inefficient, we may use two granules of the hydrobromate of morphine every quarter of an hour. In the remissions of the disease, which suggest a return to health, the cerebral functions must not be stimulated, and irritability of the nervous system may be quieted by the use of two to four granules each of digitaline and aconitine every evening. Improvements of this character must not deceive us and encourage inactivity as to treatment, but rather should they stimulate us to interference, with more hope that a useful purpose will be accomplished.

ACUTE ENCEPHALITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Congestion	Cocaine.
		Cephalalgia	Caffeine.
		Vertigo	Valerianate of atropine.
		Troubles of sight and hearing	Hyoscyamine.
		Contractions	
		Convulsions	
		Delirium	Aconitine, digitaline.
		Paralyses	Brucine.
		Fever	Veratrine, aconitine, digitaline, hydrobromate of quinine.
		Constipation	Podophyllin.
		Retention of urine	Daturine.
		Vomiting	Codeine, quassine.

Encephalitis, Chronic (*Sclerosis of the Encephalon*).—When sclerosis begins to show appreciable symptoms, the lesions have already reached such an advanced stage that a cure can not be expected by any course of treatment. Only a decided modification of the nutrition of the nervous centers could effect a regeneration of the compromised tissues, or prevent the neoplastic process from continuing to develop. If syphilis has taken possession of the organism, we can accomplish much by an active course of antisyphilitic treatment; but in other cases we shall do well if even slight results are obtained with a combination of iodoform and phosphide of zinc. Four granules of each may be used three or four times daily. The fever and perisclerotic congestions may be checked by the use of one granule of aconitine every half-hour, in acute cases; in chronic ones, by two granules, two to four times daily. Abolition of functions, which results from the destruction of organs which should execute or direct certain functions, is irreparable. Cephalalgia, which is almost always caused by congestion, will yield to aconitine, which is also the best remedy for peripheral neuralgias in general. In some cases gelsemine will be more suitable than aconitine, especially if the case present decided evidences of depression; two granules may be given every half-hour. For vertigo, two granules of caffeine should be given every half-hour, or guaranine in similar doses, or valerianate of atropine in one-granule doses every hour. The paralyses which result from want of equilibrium in the innervation may be overcome by the prolonged use of sulphate of strychnine, two granules being given every two hours. Those forms which result from the destruction of gray matter, owing to the proliferation of the neuroglia, are completely incurable, the progress of the disease being marked by successive congestions, followed by inflammation with proliferation. The plan of treatment should be directed mainly against hyperæmia, if we desire to prevent, or at least to retard, the progress of the lesions.

CHRONIC ENCEPHALITIS.	DOMINANT.	Modification in the nutrition of the nerve-tissue	Iodoform, salts of mercury. Phosphide of zinc.
	VARIANT.	Fever . . . . Congestion . . .	Aconitine.
		Abolition of function .	Incurable.
		Cephalalgia . . .	Aconitine.
		Neuralgia . . .	Gelsemine.
		Vertigo	Caffeine.
		Paralysis	Sulphate of strychnine.

Endocarditis.—See Pericarditis.

Enteritis.—Enteric fluxion may be produced by the most varied causes, and none of them should be overlooked if therapeutic intervention is to be really effective. Enteritis may arise from direct irritation, as is the case when imperfectly digested food is converted into a foreign body within the intestines, and inflammatory reaction of the intestinal mucous membrane is the result. Dyspepsia, therefore, is frequently the cause of enteritis. In such a case pepsin would be indicated to facilitate digestion, and Sedlitz Chanteaud to secure regular evacuations of the bowels. Of the pepsin, two or three granules may be given with each meal. If constipation exists, the prolonged contact of fecal matter with the intestine, together with the irritation which is caused by its decomposition, may result in inflammation. The daily use of Sedlitz Chanteaud, and of three to five granules of podophyllin at night, will be sufficient to relieve most of the cases. The presence of worms and other foreign bodies in the intestine has the same pathogenic action, and calls for the same treatment. Irritative fluxion, whether direct or reflex, if it is repeated and intense, almost always demands the use of aconitine, one or two granules being given three or four times daily. Reflex irritation may be caused in different ways, the most frequent of which are associated with the action of cold, extensive lesions of the skin, and strong moral emotions. In the first case, it is necessary to excite to action the secretory functions of the skin by means of aconitine, which acts not only as a preventive of congestion, but also as a diaphoretic ; one granule may be given every half-hour or every two hours, according to circumstances. In the second case, since the condition is one of nerve paralysis rather than of vascular irritation, the hydrochlorate of morphine is preferable, and two granules of it may be given every hour. The suppression or diminution of a hæmorrhoidal flux may also excite intestinal congestion by a compensatory action. If hæmorrhoids are present, we may use two granules of aconitine and two of ergotine three or four times daily; while for dysmenorrhœa, one granule of veratrine and one of hyoscyamine may be given every two hours. The stasis which is caused by hepatic or cardio-pulmonary lesions requires that the nervous system be relieved of its excess of blood. The use of leeches may be of service, but in general it will suffice to administer a heart tonic, and to produce sufficient purgation to diminish the intestinal congestion. To accomplish this purpose, two granules of digitaline may be given two or three times daily, and five of podophyllin every hour, until four doses have been given. In other cases the enteritis is the result of general infection of the organism. If it is due to malaria, which is indicated by a more or less pronounced periodicity of the intestinal disturbances, five granules of the sulphate of quinine may be given every hour. If the cause is typhoid or variolous intoxication, the sulphide of calcium, or the salicylates of soda, quinine, or iron, may be given in doses of two granules every two hours. The dyscrasias may also give rise to excessive intestinal secretion with or without diarrhœa, as is seen in the case of Bright's disease, cancer, etc. The best agents for such conditions are cotoine, in three to five granule doses four to six times daily, and diuretics to divert the discharges into other channels. Important symptoms which can not be neglected are pains of a colicky character, which should be treated with the hydrobromate or the hydrochlorate of morphine, in two-granule doses every quarter of an hour. They may be used alone or in connection with one granule of hyoscyamine every half-hour, if there are excessive contractile efforts. Mucous diarrhœa should be treated with morphine and brucine, two granules of each being given every hour. Digestive troubles demand the use of quassine and pepsin, two or three granules of each to be given with each meal. Fever should be treated with one granule of aconitine every quarter of an hour, or less frequently if the fever is not severe; and this treatment should be adopted before that which is designed to check the catarrhal discharges. Icterus, which is frequently present when the upper portion of the intestine is involved, may be treated with Sedlitz, to which two granules of calomel every hour may be added.

The foregoing are the most common symptoms in catarrhal enteritis. If the disease is of the choleriform variety, or *cholera nostras*, the same treatment which was prescribed for epidemic cholera (see under *Cholera Morbus*) should be followed, for the disease has the same clinical physiognomy, and differs from the epidemic form only by its slight mortality rate, and the infrequency of the cases at a given period. The most frequent symptoms of this variety are vomiting and serous diarrhœa, which may be treated with one to three granules of hydrochlorate of morphine and of sulphate of strychnine, every quarter of an hour, dissolved in a stimulant infusion. Hypothermia may be effectively treated with two granules of phosphoric acid every half-hour. Painful cramps may be relieved by one to three granules of the bromide of camphor every quarter of an hour, or one granule of hyoscyamine every half-hour. Adynamia requires heavy wines, should the vomiting continue, together with one granule of the sulphate or the hypophosphite of strychnine every hour. In the chronic form of this disease the symptoms are quite different. Those which require particular attention are constipation, tenesmus, and lientery. The first should be treated with two or three granules of veratrine three or four times daily; the second, with one granule of atropine every two or three hours; and the third, with a diet of milk, meat powder, peptones, etc., together with pepsin and diastase to assist the digestion.

ENTERITIS.

DOMINANT.	Direct irritation	Dyspepsia	Sedlitz Chanteaud, pepsin.
		Coprostaxis	Sedlitz Chanteaud, podophyllin.
		Foreign bodies	Podophyllin, aconitine.
	Reflex irritation	From cold	Aconitine.
		Cutaneous lesions	Nitrate of pilocarpine.
		Moral emotions	Hydrochlorate of morphine.
	Compensatory fluxion	Hæmorrhoids	Aconitine.
		Dysmenorrhœa	Veratrine.
	Stasis	Of hepatic origin	Podophyllin.
		Of cardio-pulmonary origin	Podophyllin, digitaline.
	Infection	Malaria	Sulphate of quinine.
		Typhoid	Sulphide of calcium.
		Variola	Salicylates.
	Dyscrasias	Bright's disease	Cotoine.
		Cancer	Diuretics.
VARIANT.	Catarrhal	Colic	Hydrobromate of morphine. Hyoscyamine.
		Mucous diarrhœa	Hydrochlorate of morphine. Brucine.
		Apepsia	Quassine, pepsin.
		Fever	Aconitine.
		Icterus	Sedlitz Chanteaud, calomel.

Epilepsy.—It is not yet known with positiveness in what way epilepsy is originated. While it may be said that cerebral anæmia is the primordial lesion, this does not suffice to give us a clear knowledge as to its pathogenetic process. In cerebral anæmia, which is caused, for example, by lesions of the aortic orifice, we seldom observe disturbances like those which characterize the *morbus sacer*. There must therefore be something besides cerebral anæmia which acts as the cause of this neurosis. Epilepsy has been the subject of patient investigations, and the occasion for the most varied forms of treatment. At the present time, most of the drugs which were formerly employed have been discarded, the treatment being limited to large doses of the bromide of potassium. Medication with this drug furnishes results which are apparently favorable; but, if the case of the patient who has undergone such treatment is followed for some time, it will be seen that improvement is almost always temporary, and is likely to be counterbalanced by psychical lesions of an important character. In the author's opinion, the use of the bromides in large quantities should be reserved for cases which are rebellious to every other form of treatment, and in which the repeated attacks of the disease, and the psychical troubles which are peculiar to it, render life unendurable. Before using the bromides, we should try other agents which are less harmful, and in many cases are quite as beneficial. We should first distinguish idiopathic from symptomatic epilepsy. The latter may or may not be curable, according as the condition of which it is a symptom is or is not curable. Reference is now made to the former variety in detailing a plan for treatment. Cerebral anæmia should be treated with atropine, the doses being regulated by the tolerance of the patient, and care being always taken not to exceed the physiological effect. Twice a day, one to three granules of atropine may be given, whether the attacks occur regularly or not. If they occur periodically, or are announced by unequivocal prodromal symptoms, the treatment should be of a still more active character; and, as the time for an attack approaches, one granule should be given every half-hour, until the throat is dry and the pupils are dilated. The susceptibility of the nervous centers should be controlled by hydrotherapy and gymnastics, so regulated that they will not be harmful instead of useful. Certain diatheses have a decided influence upon the production of the disease. We should therefore insist upon antidiathetic treatment, if we desire to obtain certain and durable results. The arthritic diathesis calls for the use of two granules of colchicine two or three times daily, and two granules of the salicylates of soda and lithia three times daily. In cases which are associated with syphilis, three granules of iodoform should be given three times daily, or six to twelve granules of the iodide of mercury daily. Scrofula demands two granules of iodoform and two of the arseniate of iron three times daily; and chlorosis three granules of the valerianate of iron three times daily, or six to nine granules of the arseniate of manganese daily, together with two granules of the hypophosphite of strychnine, three times daily. The readiness with which attacks are sometimes excited by causes which are apparently insignificant shows that there is an exaggerated condition of irritability, both central and peripheral. This condition may be relieved by the use of two to four granules of the bromide of camphor three times daily, and the number of doses may be increased if the sensibility of the patient indicates that an attack is approaching. Mobility of the nervous system may be relieved by two or three granules of the valerianate or the phosphide of zinc three times daily. For the excitability of the *medulla oblongata*, which is sometimes the principal cause of epilepsy, but of the nature of which we are ignorant, we should give for a long period one granule of aconitine and one of cicutine three times daily. The cardiac troubles, which influence the circulation deleteriously, and by that means the functional activity of the nervous system, may be treated with two granules of digitaline and five of caffeine two or three times daily. Nocturnal attacks may be controlled by giving, each night before retiring, five granules of croton chloral every quarter of an hour until a hypnotic effect is produced. The sirup of the hydrate of chloral will produce the same result; but its effect upon the digestive organs is bad. In rebellious cases of epilepsy we may use nitrate of silver, though its efficiency is doubtful, or the bromide of potassium, which will control the attacks more or less completely as long as its sedative action lasts.

EPILEPSY.

DOMINANT.	Pathogenic	Cerebral anæmia .	Atropine, hydrotherapy, gymnastics.
	Etiologic	Arthritic diathesis .	Colchicine, salicylates of soda and of lithia.
		Syphilis . . .	Iodoform, iodide of mercury.
		Scrofulosis . .	Iodoform, arseniate of iron.
		Chlorosis . . .	Valerianate of iron, arseniate of manganese, hypophosphite of strychnine.

VARIANT.	Exaggerated central and peripheral irritability	Bromide of camphor.
	Mobility of the nervous system	Valerianate and phosphide of zinc.
	Excitability of the *medulla oblongata*	Aconitine and cicutine.
	Cardiac troubles	Digitaline and caffeine.
	Nocturnal attacks	Croton chloral, or hydrate of chloral.
	Rebellious cases	Nitrate of silver, bromide of potassium.

Epistaxis. — The predisposing and determining causes of nasal hæmorrhages are those which pertain to all hæmorrhages. Among the most frequent of the former are youth, the lymphatic and sanguineous temperaments, degeneration of the vascular tunics, stimulating food, insolation, etc. Among the latter are traumatism, active and passive congestions of the cranium, sneezing, foreign bodies, etc. Under whatever form the hæmorrhage may be produced, it is evident that the principal lesion consists in the want of resisting power on the part of the vascular walls. The dominant vital indication will consist, therefore, in increasing their tonicity by restoring the contractility of their muscular elements. The most useful medicaments in the majority of cases will be three granules of ergotine every quarter of an hour, or one granule of sulphate of strychnine every quarter of an hour. When the hæmorrhage is caused by active congestion, we should meet it with aconitine, as well during the crisis as in the intervals, one granule being given every half-hour until the symptoms disappear. Two granules twice daily will prevent the recurrence of the flow, especially if digitaline be combined with it. Epistaxis from passive congestion should be treated with revulsives, derivatives, and the sulphate of strychnine, combined with digitaline, to facilitate the venous circulation. Two granules of each may be given three times daily. In the cases in which the dyscrasias are complicated by hæmorrhages, two granules of the arseniate or the phosphate of iron may be given every two hours during the attacks ; two granules three times daily in the intervals. The adynamic forms of disease are often accompanied by nasal hæmorrhage. We should give, in such cases, two granules of ergotine, or of sulphate of strychnine and phosphoric acid, every hour until the desired effect is obtained. Malarial poisoning may have for one series of phenomena epistaxis, which is more or less periodic in character. Twenty granules of the sulphate of quinine, with three of the arseniate of strychnine, three times daily, will cause the disappearance of this symptom, which in some cases may excite alarm on account of its resistance to all the hæmostatics. The hæmorrhage appears periodically in some cases in which malarial poisoning is not a complicating element. It is so in those cases in which it is excited by alcoholic liquors, by irritating food, etc. Aside from the removal of the cause, which does not always suffice, as the organism, in such cases, seems to have acquired a habit of congestion, it is indispensable that the arseniate or the hydroferrocyanate of quinine be given in two-granule doses three times daily. The anæmia which results from severe or frequently repeated hæmorrhages from the nose, and which predisposes the patient to additional hæmorrhages, may be cured by the use of two granules of quassine and three of the salts of iron three times daily. Syncope, in debilitated persons, or in those with whom the loss of blood has been considerable, should be treated at once with phosphoric acid, hypophosphite of strychnine, and caffeine, one granule of each being given every quarter of an hour. If the condition of the patient is such that the rapid absorption of medicinal substances can not be anticipated, a gramme of ether should be injected into the cellular tissue, and this will quickly revive the patient. Internal treatment should be supplanted in such cases by the use of suitable local hæmostatics. The most efficient means of this character are a three- or six-per-cent solution of perchloride of iron, which may be injected into the nostrils, a ten-per-cent solution of cocaine, or, as a last resort, the plugging of the anterior and posterior nasal fossæ. In simple cases of hæmorrhage, such, for example, as may constitute a natural therapeutic agent, cold will suffice, if a hæmostatic is required, applied to those regions which are most sensitive—for example, the testicles, sides, chest—or compresses saturated with ether may be applied to the frontal region.

EPISTAXIS.	DOMINANT .	.	Vascular atony .	Ergotine.
	VARIANT.	Causal . .	Active congestion .	Aconitine.
			Passive congestion	Strychnine, digitaline.
			Dyscrasias . .	Arseniate of iron.
			Adynamia . .	Sulphate of strychnine.
			Malarial poisoning	Sulphate of quinine.
		Symptomatic	Periodicity . .	Hydroferrocyanate of quinine.
			Anæmia . .	Quassine, iron.
			Syncope . .	Phosphoric acid, hypophosphite of strychnine, caffeine.
			Rhinorrhagia .	Local hæmostatics.

Erysipelas.—Pathologists are not in accord as to the primary cause of erysipelas. While some consider it a specific disease, others recognize in it only the characters of a simple inflammation of the skin. Such is the influence which is exercised by preconceived notions that the simplest facts are differently interpreted by different authors. Jaccoud, for example, considers erysipelas as a cyclical disease—that is to say, a series of phenomena with a definite duration, the phenomena succeeding each other in a regular order, and disappearing in obedience to the action of remedies. Hebra, on the contrary, denies that there is any regular order in the succession of these phenomena, and that their duration can either be determined or foreseen. This variability in the phenomena is so little influenced by treatment that Hebra is persuaded that the result will always be the same, whatever form of treatment is followed. According to the same author, most of the patients recover, some of them die, but the relative mortality remains constant from year to year. Let us see if it is possible to harmonize these two opposing views. Dosimetry can not admit, however, that the same disease can be cyclical and non-cyclical at the same time. It has been said of dosimetry that it is a system of medicine which is limited to symptoms, but that is the case only when the poverty of science prevents it from being anything else.

Always, on the contrary, when the fundamental cause is known, dosimetry procures the most active weapons for fighting it. That is the reason why it never loses from view the principle of the dominant, which has so important a bearing upon all questions of pathogenesis. From a knowledge of such questions therapeutic results proceed, and these should be the object and aim of all physicians who desire to cure or to relieve their patients. Every cyclical disease presupposes a morbid principle which undergoes a certain evolution, and, in so far as this evolution is incomplete, the disease has not terminated. This morbid agent is, then, a substance which lives in our organism. Fortunately, we know that these agents may die before they have completed their natural evolution; furthermore, we know what agents will destroy them, and in this fight we possess weapons of precision to use against the infinitely small, but likewise the infinitely numerous. This theory of specificity reckons among its most distinguished defenders Wells, Velpeau, Bouillaud, Trousseau, Gosselin, Jaccoud. Even before the microscope had demonstrated the enemy, its presence was suspected, and since then the question of the existence of the parasite has been settled by the labors of Hueter, Orth, Cohn, Bouchard, and, quite recently, Dupeyrat and Fehleisen. The opposite theory will not yet admit that it is defeated, and, while it does not deny the existence of parasites in the blood and other fluids of erysipelatous patients, it attributes their existence to morbid modifications in the organic liquids, which enable the parasites to live. The cultures recently made by Fehleisen with micrococci (*bacterium punc-*

tum) found in the lymphatics of that portion of the skin which has been invaded by erysipelas, and the reproduction of the disease with all its characteristics in a woman by inoculation with these culture fluids, have dissipated the last doubts of the few remaining partisans of the humoral and inflammatory doctrine. But, if it is demonstrated that erysipelas is a parasitic or a microbiotic disease, how does it happen that so careful an observer as Hebra has failed to recognize the fact that the disease is of a cyclical character? How can its contagious character, its eruptive phenomena, its reproduction by inoculation, be harmonized with the inconstancy of its duration? The solution of this question is furnished by the study of the disease. Its progress is essentially the same as that which exists, or is believed to exist, in connection with furuncles, which are propagated and multiply by a kind of auto-inoculation. Parasitic infection is therefore local, that is, limited to a certain zone of the skin. For, by studying the morbid process upon that zone exclusively, it is observed that the disease always evolves in the same way, and that its duration is constant in all cases. It is really, then, a cyclical disease. But, as it almost always extends and is propagated *per contagium*, as Hebra says, it happens that it varies in its *ensemble*, according to the nature of the tissues attacked and its extension, which gains from step to step. In other words, the disease is composed of a variable series of local invasions, each one of which is subject to the same invariable rule of morbid phenomena. The cyclical character of erysipelas explains the want of success which has attended its treatment with the means which have hitherto been used. Jaccoud even declares that the power of the physician is limited to converting into a serious form this disease, which is usually of a benign form. Hebra, after having obtained the same result from treatment of different kinds, concludes in favor of the expectant method. Louis shows by statistics, which are as extensive as they are exact, that the most active form of treatment can boast of shortening the disease by only three quarters of a day when compared with other methods. This result is not surprising, for, aside from the fact that the treatment is almost always exclusively symptomatic and most frequently local, allopathic means of medication are almost always perturbing, and very rarely effective. The treatment should be both fundamental and symptomatic; in other words, both the dominant and the variant should be enforced. Since erysipelas is due to the proliferation of the *bacterium punctum*, we should oppose this morbid agent during the entire course of the disease by the most efficient parasiticides. As a rule, the alkaloids are parasiticides, which accounts for the results obtained in eruptive fevers by the administration of defervescents—aconitine, veratrine, digitaline, and strychnine. The most efficient agent in all diseases of this kind is sulphide of calcium, and its use should not be neglected as soon as the disease appears. Its action may be increased, if necessary, by the use of salicylic acid and the salicylate of quinine. The sooner one has recourse to the dominant, the greater will be the profit which is derived from it. It is all important to establish the diagnosis as soon as possible, and thus prevent the extension of the disease by the dissemination of its germs. During an epidemic the diagnosis is easily made in consequence of the painful engorgement of the glands in the vicinity of the region in which the exanthema is first apparent. Sulphide of calcium should be given every quarter of an hour or every hour, or in two-granule doses every two hours, according as one designs to accomplish the checking or the attenuation of the disease. The period of invasion is sometimes announced by such violent chills that they seem like the precursors of pneumonia. In this stage of febrile movement we should give phosphoric acid and the sulphate or the arseniate of strychnine. The valerianate or the arseniate of caffeine will relieve cephalalgia. Nausea and vomiting, which indicate that the parasite has established itself upon the gastro-intestinal mucous membrane, require evacuants, of which Sedlitz Chanteaud, emetic, or emetine will be found efficient. For children emetine should be preferred, two or three granules being dissolved in a little water, and the dose being repeated at intervals of ten minutes until vomiting is produced. In the period of eruption, when by the sensitiveness of the organism the foreign bodies which irritate it are expelled from the tissues, all the phenomena are still due to the presence of the parasite. The dominant is always indicated therefore, and the variant must be chosen in accordance with other indications which, though secondary, should engage our attention. The fever, which is almost always elevated, might, perhaps, be of service, if we had not always other weapons for the essential cause of the disease; but, as there are other means at our disposal, we should modify the fever so as to economize the forces of the body to the greatest possible extent. The means which may be used to overcome the disease by assisting the dominant, when the febrile elevation interferes with its action, are veratrine, when the digestive passages are obstructed or the phlogosis of the skin is excessive; digitaline, when there is delirium in consequence of an irregular distribution of the blood; aconitine, when the fever exceeds 39°; the arseniate or the salicylate of quinine, when the type of the fever is intermittent or remittent. Delirium from cerebral anæmia, when the fever is very high, will yield to the use of generous wine and arseniate of strychnine; ålbuminuria, which is almost always transient, calls for means which will facilitate diuresis without unduly stimulating the renal function. Such means may be supplied with a few granules of colchicine or of digitaline. After the parasites have been destroyed, means should be employed to excite elimination of the morbid products which they have left behind them, and, as bacteria prefer the protective tissue, it is in these tissues especially that elimination should be stimulated. Diaphoretics, and among them the nitrate of pilocarpine, may be used with advantage; but as a rule the action of the sulphide of calcium upon the skin will be sufficient both to kill and to eliminate the parasite. When the digestive organs are in such a condition that reparation by means of food is too slow, the appetite may be revived and the strength increased by quassine, arseniate of iron, and sulphate of strychnine. Local or external means of treatment should be limited to the use of weak local disinfectants; for example, of lycopodium, salicylated starch, or camphor. External applications of cotton wool will also be of service in preventing contact with the atmosphere and dispersion of the germs. Constant applications of cold water will also soothe the patient and reduce the local as well as the general temperature; they will in addition assist in destroying the microbes. Though such applications may sometimes be useless, they are at least, according to Hebra, always free from danger. The means which have been devised for preventing the entrance of the microbes into the body may sometimes be injurious. In the attempt to derive much benefit from such means, we might unintentionally destroy the lymphatic vessels, by which the elements of the disease are disseminated.

ERYSIPELAS.	DOMINANT.		Infection by the bacterium punctum	Salicylate of quinine. Sulphide of calcium.
	VARIANT.	1st period: Invasion.	Chills	Phosphoric acid, sulphate of strychnine.
			Cephalalgia	Valerianate or arseniate of caffeine.
			Nausea and vomiting	Emetine, emetic.
		2d period: Eruption.	Fever	Veratrine, digitaline.
			Delirium	Arseniate of strychnine, wine.
			Albuminuria	Colchicine.
			Gastric disturbance	Sedlitz Chanteaud.
		3d period: Destruction.	Elimination of morbid products	Sedlitz Chanteaud. Nitrate of pilocarpine.
			Restoration of strength, and relief of gastric atony	Quassine. Arseniate of iron. Sulphate of strychnine.

Fever, Intermittent.—See Paludal Infection (under *Infection*).

Fever, Puerperal.—Under this title will be considered the infectious and contagious parasitic disease which occurs during the puerperal condition, and is known under the different names of puerperal metritis, puerperal metro-peritonitis, puerperal typhus, puerperal poisoning. The characteristic feature of this disease is an infectious element, which has not yet been thoroughly investigated, which is believed by many to be a ferment, and which bears the name of lochine. The inflammatory element, which is often regarded as the most important one, is often present as a predisposition to or a complication of the disease, but of itself it is not sufficient to produce the condition which is known in practice under the name of puerperal fever; on the contrary, we sometimes see the infectious element appear by itself, without any evidence of inflammation on the part of the uterus. In a word, there is a puerperal metro-peritonitis of an infectious character, but there may also be puerperal infection without metro-peritonitis. It is the predisposition to puerperal infection caused by metritis, and the frequency with which inflammatory lesions are produced by the lochial virus, which has influenced many writers to believe in the identity of the two conditions. But, if the differences of opinion of the pathologists in respect to the pathogenesis of this disease are to be regretted, their agreement in respect to prognosis is equally so. In fact, as Pajot says, "if they differ in regard to its pathogeny, they agree in regard to its fatal character," which demonstrates the absolute impotence of the official method of practice, and the uselessness of all forms of treatment which have been recommended by the different schools. Pajot has even added: "The only treatment for puerperal fever consists, on the part of women, in not having it, and, on the part of physicians, in not communicating it." Still one sees popular physicians prescribing remedies in which they have faith every day, but the inefficiency of which is sadly demonstrated by results, at least to those who are not blinded by routine action. The sulphate of quinine is the remedy which is always prescribed for puerperal fever. The patients die one after another, but the traditional treatment continues, notwithstanding these consequences. Why should we change, for *magister dixit?* Official science has yet to find any other reason for its practice in this matter. Since death is certain, whether large doses of quinine are or are not given, why should the quinine be insisted upon? If some other agent were employed, however unlikely success from its use might seem, there would at least have been the merit of attempting to save one's patients; but to continue in the use of a drug which constantly gives negative results is not justifiable. The one who condemns quinine as useless, and with high authority, is Pajot himself, the specialist in diseases of this character. Ten years ago he wrote: "I gave sulphate of quinine in large doses so often during the lifetime of the lamented Dr. Beau that no illusion concerning this drug could be experienced by me. Marvelous as is its action in other conditions, it is perfectly useless in the one which we are discussing." (Letter to Dr. Verrier, in the "Gazette Obstétricale," concerning the treatment of puerperal fever.) The dosimetric system is more fortunate. Its plan of medication varies in accordance with the symptomatic phenomena, but its object is always to attack the cause of the disease by interpreting in a logical manner its true nature. It does not always succeed, perhaps because the infection is already so pronounced that it quickly annihilates the vital forces, in the absence of which there can be no curative action; perhaps because its intervention is required when the anatomo-pathological lesions can not be relieved—a condition which is soon reached in puerperal fever. Notwithstanding all adverse conditions, cures by this method are not infrequent, and desperate cases are recorded in its journals which are readily cured by alkaloidotherapy. It will be proper to describe the method for the prevention of puerperal accidents, which is useful at all times, but is indispensable during epidemics. Accouchement signifies a traumatism of considerable moment, together with general prostration, which is the result of muscular action and moral impression which the patient can not avoid. The wounded surface is supplied with important veins, which, having been torn, are exposed to the contact of air and the decomposing liquids which form the lochia. It is therefore easy to understand the condition which may be present in the venous system from the introduction of air and the absorption of septic products, which include miasms, bacteria, parasites—in a word, agents which result in puerperal infection, and which are developed with marvelous rapidity. The indication in such cases is therefore to contract the traumatic surface to its narrowest limits, rapidly inducing uterine involution by means of ergotine; to restore by strychnine to the muscular and nervous systems the force which was expended during labor; and to relieve the uterine mucous membrane of congestion, so as to avoid inflammation, by means of aconitine and the hydroferrocyanate of quinine. Ergotine should be given in two-granule doses every hour as soon as possible after labor is finished, and continued until the uterus has resumed its normal volume. After this involution has been obtained, we should give one granule of aconitine, one of strychnine, and two of quinine every three or four hours, until the fever which attends the establishment of lactation has disappeared. With regard to the curative treatment of puerperal infection, it should be observed that hyperthermia is the most notable characteristic of the disease. The fever may rise to 42° C., or higher, appearing in exacerbations, which occur once or twice daily. We have seen that the antiperiodic action of quinine can not be trusted for this condition, whatever be its dosage. Something besides periodicity must be opposed in this fever, namely, the infectious element; and this must be met with the salicylates or the sulphide of calcium, and local antiseptic applications. Hyperthermia demands very active defervescent treatment. The dominant may be satisfied, therefore, with two granules of the salicylate of quinine and one of aconitine every half-hour. This treatment is generally instituted by the author in his practice at the beginning of the disease, and the results have always been very favorable, if the attendant realizes the importance of regularity in the administration of the medicine. After the disease has passed its first phase, we may add to the treatment two granules of the sulphide of calcium every quarter of an hour, and diminish or double the quantity of aconitine according to the requirements. The thermometer should be the sole guide for the continuance, diminution, or increase of the dosage. The local treatment must not be neglected, and uterine or vaginal injections must be systematically made with a 2½-per-cent solution of salicylic acid. Uterine injections of chloride-of-zinc solution, 1:1,000, may also be serviceable. When the invasion of the disease is announced by chills, we should give one granule of phosphoric acid and one of the arseniate of strychnine every half-hour until a reaction occurs. It is also worthy of notice that the better the innervation of the system during the period of concentration of the virulent influences, the better will be the condition of the organism to endure reaction. Abdominal pain is sometimes intense, especially if the peritonæum is implicated; it should be treated with the hydrochlorate of morphine. Two granules may be given every half-hour, and it will both relieve the vomiting and check the diarrhœa, which may be accompanying conditions. Insomnia, which is often rebellious and of grave import, may be treated by similar means. The delirium and cephalalgia may require caffeine in two-granule doses every half-hour, in addition to the aconitine, which will relieve them if it produces its complete effect. If abscesses are formed, indicating purulent absorption, there will be little hope of saving the patient. Nevertheless, it will still be worth while to try the effect of salicylate of ammonia, with iodoform and arseniate of quinine; one granule of each may be given every half-hour. Prostration, which is almost always considerable, even when the disease has not been of long duration, should be treated with one granule of the sulphate of strychnine every hour. Suppression of the lochia calls for veratrine and aconitine, and retention of the urine for one granule of digitaline and one of hyoscyamine every two hours. This plan of treatment may be followed with all confidence, persistence and regularity by night and by day being essential, and also regulation of the dosage both as to quantity and frequency, according to the urgency of the indications and the effects which are produced. Extreme cleanliness, ample ventilation, a tonic regimen regulated by the digestive ability of the patient, and absolute exclusion of all moral influences of a depressing character are the hygienic precautions which should be prescribed and rigorously observed. Cases of simple metritis and metro-peritonitis should be treated as if they were infectious, for the reason that it is not easy to distinguish their true character at the beginning, and because it is in this first stage that they may be checked, and that our means of action will have the greatest effect.

PUERPERAL FEVER.

Preventive Treatment.

Slow involution	Ergotine.
Fatigue	Strychnine.
Hyperæmia	Aconitine, hydroferrocyanate of quinine.

Curative Treatment.

DOMINANT.	Hyperthermia	Aconitine.
	Febrile intermittence	Salicylate of quinine.
	Infectious element	
	Local infection	Antiseptic injections.
VARIANT.	Chills	Phosphoric acid, arseniate of strychnine.
	Abdominal pain	Hydrochlorate of morphine, codeine.
	Insomnia	
	Vomiting	
	Diarrhœa	
	Purulent infection	Salicylate of ammonia, iodoform, arseniate of quinine.
	Adynamia	Sulphate of strychnine, generous wine.
	Suppression of the lochia	Veratrine.
	Retention of urine	Digitaline, hyoscyamine.

Fever, Traumatic, and Other Accidents accompanying Traumatisms.—No one, at the present time, is able to tell exactly what traumatic fever is; after operations and injuries a train of local and general symptoms is observed, with varying degrees of severity, from simple epitraumatic fever to purulent infection and septicæmia, of the nature of which we are ignorant, and the varieties of which are not well defined. These accidents do not depend essentially upon traumatism—that is, traumatism alone is not sufficient to produce them, for we often see traumatisms follow the customary course to complete cicatrization, without any evidence that the general condition is affected. The influence of curative agents and of the hygienic conditions of the wound upon the appearance and progress of disturbances of the general condition shows also that fever is not provoked by simple lesions of structure. The most reasonable theory is that fever is produced by the absorption of decomposed matter in the form of certain ptomaines, which are developed at the surface of injured tissues, and which, by modifying the condition of the blood, influence the innervation of the nutritive system to such an extent as to determine febrile reaction. According to the malignity and the quantity of these products, as well as the facility with which they are absorbed—in a word, according to the dose of these deleterious matters which is introduced into the blood, and the impressionability of the patient—will result the intensity of the traumatic fever and the development of its various forms. The indication is, therefore, to prevent the decomposition of the liquids which bathe the wound by perfect cleanliness, the application of unirritating disinfectants, and prevention of the entrance of microbes from without; in the second place, by relieving the nervous and circulatory systems of congestion, so as to prevent reaction from the irritation which has been caused by the absorption of toxic matter. This will be accomplished with aconitine and veratrine joined with tonics, such as strychnine and the hydroferrocyanate of quinine. Treatment may be preventive or curative. If preventive, it should begin, if possible, a few days before the reception of the traumatism, and consist in the administration of two granules of aconitine and two of veratrine three times daily. After the operation has been performed, we may give two granules of the arseniate of strychnine and two of the arseniate or the hydroferrocyanate of quinine three times daily to stimulate the nervous system, repair the losses which have been sustained, and develop impressions which should be strengthened by the modifications which are effected in the secretions. This treatment has given surprising results whenever it has been employed. The traumatic fever becomes a matter of no consequence, and cicatrization takes place with remarkable rapidity. The absence of fever enables us to feed the patient liberally, a condition which is very important for the attainment of good results from operations. If this preventive treatment can not be adopted, or proves ineffective, we must endeavor to check energetically the fever which is developed. We should make use of the same means as in the previous condition, but they should be used with greater activity. One granule of aconitine and one of veratrine may be given every half-hour until the mercury indicates 38° C. As soon as there is a remission, three granules of the hydroferrocyanate of quinine with one of the arseniate of strychnine may be given every two hours. Purulent infection calls for the same treatment, defervescents being added—for example, one granule of the salicylate and one of the arseniate of quinine being given every half-hour.

In cases of septicæmia the salicylate of ammonia may be added, the antiseptic action of which has often been demonstrated by the author. Two granules may be given every hour. The vitality of wounds will be modified by dosimetric agents as surely as by external means—the inflammatory condition by one granule of aconitine every two hours; the atony by two granules of phosphoric acid four times daily, and strychnine in similar doses; the pain by two granules of morphine or gelsemine every quarter of an hour until relief is obtained. Somnolence after wounds have been received will indicate the use of two granules of the arseniate of caffeine every two hours; want of appetite should be met by properly selected diet, and by two or three granules of quassine before eating; constipation, which is of such common occurrence on account of the enforced rest in bed, will be relieved by the daily use of Sedlitz Chanteaud.

Suppuration of a non-laudable character, which indicates retarded cicatrization and is an attendant of weak constitutions and lymphatic temperaments, requires two granules of iodoform and two of the arseniate of iron three to six times daily.

TRAUMATIC FEVER, ETC.	DOMINANT.		Aconitine, veratrine, arseniate of strychnine, hydroferrocyanate of quinine.
	VARIANT.	Want of appetite	Quassine.
		Constipation	Sedlitz Chanteaud.
		Local inflammation	Aconitine.
		Local atony	Iodoform, arseniate of iron.
		Slow cicatrization	
		Somnolence	Arseniate of caffeine.
		Purulent infection	Arseniate and salicylate of quinine.
		Septicæmia	Salicylate of ammonia.

Fever, Typhoid.—Science, in spite of its extensive investigations and profound discussions, has not yet been able to determine the causal element of this disease, the treatment of which is about to be referred to. It would appear that the pathogenic element resides in a living agent, which originates either in man or external to him, and is developed and proliferated within his intestines, poisoning the organism until, as a result, there is one of the severest diseases with which humanity is afflicted.

The effects of this intoxication are especially manifested by exaggerated bodily heat, and by rapid and profound diminution of the strength. If, therefore, we seek to eliminate the morbific agents with the material which serves as soil in which they may develop, to neutralize those which we can not eliminate, to lower the hyperthermia, and to prevent or effectually overcome the adynamia, the disease will be reduced to its simplest expression. Its duration will, of necessity, be abbreviated, and by suppressing the morbid elements which give to it its gravity, we transform it into a benign disease, with a mortality which is much less frightful. The dominant indications naturally follow from these simple pathological considerations. The intoxication from typhoid fever does not take place in the same manner as in the eruptive fevers. On the other hand, the poisoning appears to be gradual and progressive, and to result from an increasing absorption of toxic principles, rather than from a rapid infection of the entire organism with microbes. As a therapeutic corollary, it follows that an active intervention, in order to be effective, should begin with the first days of the infection; also, that the diagnosis is difficult in the first stage of the disease, which is characterized by oscillations of the temperature, with an upward tendency. By late interference the opportunity for being truly useful is lost; on the other hand, the disease may be checked by early interference, and then the doubt may arise whether the condition would really have developed into typhoid fever. The prodromic signs and the course of the disease during the first few days are sufficiently characteristic to put the physician upon his guard, and compel him to act at the proper moment in as resolute and energetic a manner as if the disease were entirely established. The principal indications to be satisfied are the following:

1. To relieve the digestive organs of all fermentable materials. The Sedlitz Chanteaud, by its mild and moderate purgative action, by its slightly bitter taste which is gradually tolerated without any difficulty, and by its defervescent properties, is the agent which should be preferred. A small teaspoonful in water in the morning, or a large spoonful dissolved in water and taken during the day, will be sufficient for ordinary doses, but the quantity must be regulated by the intensity of the symptomatic diarrhœa of the disease.

2. To neutralize morbific agents. This indication, which is fundamental, will be satisfied by the use of antiseptics and parasiticides. The selection of the means is a very important matter, for those agents should never be chosen which depress the vital forces too much, or which irritate the gastro-intestinal canal, the vitality of which has been so profoundly affected. Phenic acid, salicylic acid in large doses, the preparations of cinchona, etc., in spite of their advantages, have this decided disadvantage. In addition to the alkaloids, which are all parasiticides to a greater or less degree, we should give the sulphide of calcium, in two-granule doses, every two hours; or, the salicylate of quinine, in one- to three-granule doses, every two hours.

3. To moderate the hyperthermia. This necessity, which is universally recognized, and is observed in all forms of treatment, arises not only from the fact that prolonged hyperthermia is an element of danger, but also from the fact that reduction of the fever has a very favorable influence upon adynamia and all the conse-

quences of the morbid process. The method of seeking to obtain this result, by the use of large doses of quinine, is not the best one, for it implies considerable disturbance to the organism, and its use must be interrupted in order to avoid inconveniences which are perfectly apparent. Defervescence should be obtained gradually, and therefore only such doses as are absolutely required should be given, lest the adynamia be thereby increased; on the other hand, the dose should not be less than is required, otherwise the medication will be ineffective. The adaptation of the doses to the resisting power of the disease, that is to say, dosimetry, could not be improved upon in these cases. The plan should be fractional and repeated doses, simple and pure remedies, the introduction into the stomach of those things only which are necessary, and in doses which will not interfere with the absorptive capacity; and this plan can not be violated without injury to the patient. In many cases it will be proper to dissolve the granules in water, or in water mingled with wine or milk, because the irritability of the intestinal tube is such that the granules will quickly pass through it undissolved, not finding sufficient fluid to dissolve them. We should also remember that the entire quantity of medicine which is taken into the stomach, even if in solution, is not effective—a portion of it is discharged; and hence we can not use doses which, under other conditions, might be tonic, but in this disease will barely produce the desired effect. The defervescent agents which are used in dosimetry, and the superiority of which has been demonstrated by experience, are aconitine, veratrine, digitaline, hydroferrocyanate of quinine, or salicylate of quinine. The quinine is used on account of its antiperiodic effects, the others because of their influence upon hyperthermia. They should be given in combination, as in that way their effect will be found to be more prompt and more certain, and, besides, given in this way their absorption is more probable than if any equivalent dose of a single substance is given. The frequency of the doses must be regulated by the intensity of the fever, and, above all, by the results which are obtained. When beginning the use of defervescents, we should administer them every quarter of an hour until the thermometer indicates a remission. During the first few days the treatment is intended to be abortive, and, if the case is taken in season and the treatment is faithfully carried out, it will be followed by the most gratifying results. After this first period has passed, it will no longer be possible to abort the disease, and our efforts must be expended in the prevention of excessive temperatures. Then it will suffice to give defervescents every hour, with longer intervals at night, when remission would naturally occur. This plan of defervescent treatment may require continuance for several days; but it must be kept up until its effect is produced, unless there is a contra-indication of greater weight. In the author's experience it has been tried for eight days in succession, and, when hope was beginning to fail, the change came rapidly. This result could have been attained in no other way than by obstinate persistence. Variety and versatility in the plan of treatment almost always are a source of sorrow. An illustration may be given in the following case: The fever was well defined, had reached its second stage, and presented grave symptoms. The dosimetric plan of defervescent treatment dissipated the symptoms referable to the nervous system, the tongue became clean, the urine clear, and the temperature was reduced, but beyond this no improvement could be obtained, the defervescence remaining incomplete. In spite of persistent treatment, the condition could not be changed. It was not a dangerous one, but it was quite unusual that it should resist so long, though the cause, probably, was that the treatment had been begun too late. Upon the ground that the resistance of the fever might be due to insufficiency of the medication, the old-fashioned (non-dosimetric) means of treatment were tried. The sulphate of quinine and the decoction of quinquina were given in allopathic doses. One day of this treatment, which is justly called incendiary, was sufficient to change the condition and bring the patient back again to the first condition of the disease. The tongue became dry, the fever increased, delirium returned; in a word, the gravity of the case became such that it was decided to return to the dosimetric treatment, and to be more patient in the future. From the foregoing it will appear that typhoid fever must not be considered as a disease which can be overcome in a few days. We must be satisfied with a simplification of the cases, a removal of the severe symptoms, and must leave the rest to the natural evolution of the disease, because lesions which have already been established must undergo certain absolutely essential conditions of repair. Jugulation of the disease is possible in its first stage; after that has passed we can only hope to lessen the severity of it. In the majority of cases it may be said that typhoid fever, treated according to dosimetric principles, is to the same disease, treated by other methods, as discrete variola is to the confluent form. It is the same disease, and is subject to the same phases, but with great difference as to the suffering, the gravity, and the mortality which attend it.

4. To oppose adynamia. This indication may be satisfied by avoiding violent remedies, and giving the patient a diet which is suitable to his digestive ability, by moderating the cause of weakness, and giving neurosthenic remedies in liberal doses, especially the arseniate of strychnine, of which one granule may be given every hour. Strychnine is the tonic *par excellence*, and its superiority is of that kind which builds up without producing irritation; however long it may be used, the tissues will not become congested, and no lesion will be evident, even from toxic doses. It is a

truly dynamic medicament, and might be considered almost a specific for typhoid fever. The secondary indications are more numerous than the primary, and among them are some which are rarely met, because if the treatment has been well carried out they do not appear. The books on pathology should give special attention to the association of the symptoms, and should separate clearly those which are essential from those which appear only as the result of our therapeutic inefficiency. Unfortunately, the pathologists mention in their books all the symptoms which are possible, all consequences which are imaginable, not even excepting death, in connection with diseases which are susceptible of cure. Chapters which are terminated with directions respecting treatment should never confound the natural evolution of a disease with its course when modified by the intervention of art. The epistaxis, which may appear either at the beginning or in the course of the disease, should not be ignored; in the first case, it will be a source of weakness to the patient, in the second it will denote, in addition, a grave dyscrasia. Ergotine is the proper remedy on both occasions; but, in the second, it should be associated with the arseniate of iron or the arseniate of strychnine. Two or three granules of the ergotine may be given every quarter of an hour until the effect is obtained. Cephalalgia may usually be relieved with aconitine. Should its intensity be such that it resists the anticongestive power of that alkaloid, the bromide of camphor may be given in addition, in three-granule doses, every quarter of an hour. The same may be said with respect to the treatment of delirium which was said concerning cephalalgia. In addition, half a granule of hyoscyamine every hour will have a very soothing effect upon the cerebral functions. The treatment for hyperthermia has already been alluded to. In some cases, cold or lukewarm baths at regular intervals will be proper to reduce the heat. Ablutions with cold water and with vinegar are also very useful, not only to diminish the heat, but also to preserve the functions of the skin in the best possible condition. If hygienic regulations concerning the skin are appropriate in a state of health, how much more during disease! Pulmonary lesions in this disease are so frequent that they may serve as a means of diagnosis. Digitaline and strychnine, which have already been mentioned as filling important indications, have also their particular application in the disorders of the respiratory apparatus. Should the local pulmonary lesions become severe, or resist the use of defervescents, bryonine may be associated with them, which has the property of inducing resolution of broncho-pulmonary inflammations without aggravating the morbid condition in the intestine; one granule may be given every two hours. Vaso-motor paralysis, which is the result of the numerous and severe conditions prevailing with this disease, may be treated with two granules of ergotine and two of strychnine every two hours. The active principles of ergot, aside from their power over this form of paralysis, have a remarkable influence upon the course of the fever. For meteorism, one granule of the hypophosphite of strychnine should be given every two hours, together with occasional enemata of cold water. If the cardiac complications are of an ataxic character, they may be regulated by digitaline; if they are only atonic, caffeine or its salts may be given in two-granule doses every hour. Intestinal hæmorrhages indicate ergotine, and ice both internally and externally. Enemata of ergotine are also useful; each one may be composed of ten grammes of ergotine and twenty of water. The diarrhœa, if it is held in control, is serviceable; if it is excessive, it results in great weakness. Morphine must be used with great caution, as it readily excites congestion of the nervous centers; codeine or cotoine should be used in preference, two granules being taken every hour. The renal complications call for great prudence in the treatment, and the frequent use of the thermometer. They are almost always caused by the passage of infectious elements through the urinary filtering apparatus, and will only disappear when the pathogenic cause of the disease is overcome. The indication for the elimination of these elements or their residue may be met by digitaline or Sedlitz Chanteaud. In addition to these drugs we may give, during the declining period of the disease, two granules of benzoic acid or of benzoate of soda four times daily. Eschars [upon the skin—TRANS.] are rarely seen in patients with this disease, because the adynamia and the duration of the disease do not often lead to such a degree of disorganization. In cases in which they have occurred they may be dressed with absorbent cotton dipped in a one-per-cent solution of hydrate of chloral. Convalescence is often marked by very severe accidents. The digestion may be improved by the use of two granules of pepsin and two of quassine with each meal. The arseniate of iron and the hypophosphites of lime and soda should also serve as elements in the reconstructive treatment, two to four granules of each being given three times daily. Should suppuration occur, we should administer two granules of iodoform with two of the arseniate of strychnine four times daily; and, should the process become an extensive one, we should add three granules of the sulphide of calcium three or four times daily. For paralysis we should use two granules of phosphoric acid three times daily, or two to four granules of the phosphide of zinc three times daily. The mental perturbations may result from material lesions or from such as are purely dynamic. In the first case we should give two granules of iodoform and two of the arseniate of soda four times daily, to modify the nutrition; in the second case the vaso-motor troubles should be met with one granule of the hypophosphite of strychnine and one of hyoscyamine, three or four times daily, and three granules of ergotine three or four times daily. The foregoing enumeration of the possible indications is very incomplete, but the object has been to call attention only to those which are most frequent. The others, which are rare under any form of treatment, become still more so if an abortive plan of treatment is adopted at the beginning.

TYPHOID FEVER.	DOMINANT.	Infectious element	Sulphide of calcium, salicylate of quinine.
		Intestinal fermentation	Sedlitz Chanteaud.
		Adynamia	Arseniate of strychnine.
		Fever	Aconitine, digitaline, veratrine, hydroferrocyanate of quinine.
	VARIANT.	Epistaxis	Ergotine.
		Cephalalgia	Bromide of camphor.
		Delirium	Hyoscyamine.
		Hyperthermia	Defervescents, warm baths, cold ablutions.
		Pulmonary complications	Bryonine.
		Vaso-motor paralysis	Ergotine.
		Meteorism	Hypophosphite of strychnine, cold enemata.
		Cardiac complications	Caffeine, digitaline.
		Enterorrhagia	Ergotine, ice.
		Diarrhœa	Codeine, cotoine.
		Renal complications	Benzoic acid, benzoate of soda.
		Eschars	Hydrate of chloral (topical).
		Convalescence	Quassine, pepsin, arseniate of iron. Hypophosphites of lime and soda.
		Suppuration	Iodoform, arseniate of strychnine. Sulphide of calcium.
		Paralysis	Phosphoric acid, phosphide of zinc.
		Mental perturbations	Iodoform, arseniate of soda, strychnine, hyoscyamine, ergotine.

Fever, Yellow.—Yellow fever is a disease which is evidently infectious, and a parasitic agent has been sought as its cause. Some investigators profess to have found the microbe which answers such a requirement in rice. The analogies of this disease with bilious remittent fever lead one to suppose that the dominant of the treatment is found in the salicylate of quinine, on account of the antiparasitic and antiperiodic properties of that salt. During the entire duration of the disease, therefore, until the period of declension, two granules of it should be given every half-hour.

Its intense rhachialgia calls for two granules of the hydrobromate of cicutine every half-hour. The fever must be treated with one granule of aconitine and one of veratrine every half-hour until it has been sufficiently reduced. Should nausea and vomiting interfere with the regularity of the defervescent treatment, two granules of codeine should be added every half-hour, or one of hyoscyamine every hour. One granule of strychnine may also be given every hour to increase the tolerance of the remedies and to prevent adynamia.

If the adynamia is severe, we must give one granule of phosphoric acid every two hours.

For the hæmorrhages, which announce themselves by the *black vomit*, we should use two granules of ergotine or two of salicylate of iron every half-hour. Should melæna occur, the same treatment is indicated; but the prognosis becomes very grave.

Insomnia and delirium call for the use of two granules of the bromide of camphor every quarter of an hour. Should there be suppression of urine from renal fault, two granules of scillitine may be given every hour; if the anuria results from paralysis of the bladder, the catheter must be used, and strychnine resorted to. To diminish thirst and excite hepatico-intestinal action, Sedlitz Chanteaud dissolved in a large quantity of water may be used for an ordinary drink. During convalescence, two to four granules of quassine and a like quantity of the arseniate of quinine may be given three times daily.

YELLOW FEVER.	DOMINANT.	Infectious element	Salicylate of quinine.
	VARIANT.	Cephalalgia	Citrate of caffeine.
		Rhachialgia	Hydrobromate of cicutine.
		Fever	Aconitine, veratrine, hydroferrocyanate of quinine.
		Nausea and vomiting	Sulphate of strychnine, hyoscyamine.
		Hæmorrhage	Ergotine, salicylate of iron.
		Insomnia	Bromide of camphor.
		Delirium	Scillitine.
		Anuria	Arseniate of strychnine.
		Adynamia	Phosphoric acid.

Gangrene of the Lungs.—Necrosis of the pulmonary tissue can be cured only by elimination of gangrenous portions, and cicatrization of the cavity which results from such elimination. The dead tissues can not be restored, and therefore therapeutics has no field for action in respect to the principal lesion. As necrosis is due, however, to feeble vitality of the tissues, and as the tissues which are still uninvolved share in this feebleness to a greater or less extent, we should use all diligence to increase the general vitality and the resistance of the tissues in the vicinity of the gangrenous portion. It is only in this way that we can aid Nature effectively in her efforts at elimination and regeneration. Adynamia, therefore, should be treated with the hypophosphite of strychnine, combined with the salicylate of ammonia, two granules of each being given every hour. The prostration which the patients experience should be treated with phosphoric acid, an agent which has great dynamophoric power, two granules being given every two hours. For the thoracic pains we should give two granules of the hydriodate of morphine every half-hour, or one of cicutine at similar intervals until relief is experienced. The fetid condition of the breath and of the expectoration will be overcome by the continued use of iodoform or of sulphide of calcium, one granule being given every half-hour. As to the cough, expectoration may be facilitated by the use of benzoate of ammonia or of bromide of camphor, three granules being given every two hours. Hæmorrhage is always a matter of grave importance, not only on account of the persistence by which it is sometimes characterized, but also because it intensifies the prostration and adynamia. We should attempt to check it with three granules of ergotine every quarter of an hour, combined with one granule of the sulphate of strychnine every quarter of an hour. The fever, which is often very high, tends greatly to increase the adynamia. It should be treated with one granule of aconitine every hour until the hyperthermia is reduced. After this end has been attained, two to four granules of the salicylate of quinine may be given every hour. Diarrhœa, which is the result of the adynamia and the elimination of the septic products, calls for three to five granules of the salicylate of iron, and an equal quantity of the subnitrate of bismuth, three or four times daily. During the period of repair, we may aid the process by which new tissue is formed by giving two granules of the arseniate of iron and two of iodoform five times daily. The diet should be liberal and nourishing, and a sufficient quantity of generous wine or of cognac should be supplied.

GANGRENE OF THE LUNGS.	DOMINANT.	Adynamia	Hypophosphite of strychnine, salicylate of ammonia.
	VARIANT.	Prostration	Phosphoric acid.
		Thoracic pain	Hydrochlorate of morphine.
		Fetid breath	Iodoform, sulphide of calcium.
		Cough	Benzoate of ammonia, bromide of camphor.
		Hæmorrhage	Ergotine, sulphate of strychnine.
		Fever	Aconitine, salicylate of quinine.
		Diarrhœa	Salicylate of iron, subnitrate of bismuth.
		Cicatrization	Iodoform, arseniate of iron.

Gastralgia.—Gastralgia, cardialgia, gastrodynia, etc., as it is variously called, is a form of neuralgia which is produced as a result of the want of equilibrium in the innervation of the stomach, and which radiates, to a greater or less extent, along the distribution of the *vagus* and the *cœliac plexus*. This idea of a want of equilibrium between the nerve-forces is one which has prevailed during every epoch of the history of medicine, and has served as the basis of the *strictum* and *laxum* theory of Thémison. In fact, the constant observation of the processes of nature reveals and imposes such a notion. In all perturbations which are purely dynamic, an increase or diminution of the influence of the nerves is always observable, and its phenomena have been carefully investigated by contemporary workers, such terms as *inhibition* and *dyna-*

mogeny, *vaso-constrictor* and *vaso-dilator nerves*, etc., being used to signify the elements which are involved and the processes in which they participate. To this physiological dichotomy there is a corresponding therapeutic dichotomy; to the *strictum* there is a counterpart in hyoscyamine; to the *laxum* in strychnine. The functional lesions may, as a rule, be effectively opposed by one of these two agents, or by both at once, because it rarely happens that a compensatory spasm does not correspond to atony, just as to congestion there is always a correspondent relative anæmia of the organs near which the hyperæmia occurs, and from which the excess of blood has been borrowed. Gastralgia is due to exaggerated irritability, whether from the application of stimulants to the gastric mucous membrane or from a want of equilibrium. In other words, it is determined by the diminution of the general *tone*, such as follows, for example, the influence of depressing moral conditions, essential anæmia, chlorosis, etc. The dominant should, therefore, take cognizance of this pathogenic process, and hence the antispasmodic action of hyoscyamine will not always suffice to rapidly overcome the cramps in the stomach; its combination with strychnine is often indispensable to restore the physiological equilibrium of the forces. When the gastralgia is caused by the irritating action of food or drugs, we should begin to soothe the contractility of the stomach by the use of one granule of hyoscyamine every quarter of an hour, or by means of its congeners, the sulphate or valerianate of atropine or daturine, having first cleansed the gastro-intestinal canal by means of Sedlitz Chanteaud.

If, on the other hand, the gastralgia is due to influences of a depressing character, we should add, from the beginning, one granule of strychnine every half-hour, or of brucine if the patient is of a very impressionable disposition. As the neuralgia is due not only to perturbations of contractility, however, it is often indispensable to consider perturbations of sensibility, using for that reason the hydrobromate or the hydrochlorate of morphine.

The pain which results from the excessive sensibility is sometimes so severe as to cause lipothymia of an alarming character. In such cases two granules of morphine, with two of caffeine, used every ten minutes, will quickly produce relief.

Vomiting, which is sometimes of service by enabling the stomach to relieve itself of the exciting cause of the trouble, but which almost always increases the nervous troubles, may be treated with three granules of morphine and three of atropine every half-hour.

Dyspepsia, which is now the cause and again the effect of gastrodynia, calls for two granules of the arseniate of soda with each meal. If dyspepsia exists, gastralgia may recur frequently, but with attacks which become less and less severe. In such cases two or three granules of the cyanide of zinc may be used before each meal. Arthritis, and particularly that form which is known as biliary lithiasis, is often present with gastralgic attacks. Aside from the use of soothing remedies, we should employ in the intervals two granules of the carbonate or the benzoate of lithia with each meal.

Gastralgia may also be present as a manifestation of hysteria, or as an accident of chronic myelitis. In the first case three granules of the bromide of camphor three times daily will be the proper remedy; in the second, two or three granules of cicutine three times daily. A stubborn form of gastralgia is also a frequent complication of anæmia, and it is the more significant as it interferes with regularity in the ingestion of food.

Iron is indicated in such cases on account of its influence upon the blood, and is well tolerated if the gastralgia is due to no other cause. One or two granules of the valerianate, and a like quantity of the arseniate of iron, may be given in such cases three times daily. If the gastrodynia is very troublesome, two granules of codeine may be given with each dose of the iron, or two granules of the arseniate of manganese may be given with each meal. Certain forms of gastralgia recur periodically, without reference to the time when food is taken into the stomach.

For such cases three granules of the hydrobromate of quinine may be given every two hours, or one granule of arsenious acid four times daily, It is superfluous to add that the cause of gastric neuralgia must be sought with the greatest care in order to decide upon the appropriate treatment. The essential conditions for the insurance of a cure will consist in the use of food which is easily digested, abstinence from tea, coffee, tobacco, and alcohol, and the suitable employment of hydrotherapy.

GASTRALGIA.	DOMINANT.	Want of equilibrium in the nervous system . .	Hyoscyamine. Strychnine.
	VARIANT.	Lipothymia	Caffeine, morphine.
		Vomiting	Atropine, morphine.
		Dyspepsia . . .	Arseniate of soda.
		Arthritis	Carbonate of lithia.
		Hysteria . . .	Bromide of camphor.
		Myelitis	Revulsives, cicutine.
		Chlorosis	Valerianate of iron.
		Periodicity	Hydrobromate of quinine.

Gastritis, Acute.—Acute catarrhal gastritis is relatively a rare condition. It should not be compared with toxic gastritis, and its treatment should be varied with the cause which produces it.

Phlegmonous gastritis can only be treated symptomatically, and medical intervention is not of very great value. In acute gastritis the inflammatory element predominates. It should be treated with one granule of aconitine every half-hour, and, after the fever has subsided, with one granule of veratrine every quarter of an hour. The treatment should be begun with a purgative dose of Sedlitz Chanteaud, which may be made more agreeable to the taste by the addition of sugar and lemon-peel.

If the fever is characterized by remissions, a granule of the hydroferrocyanate of quinine may be given with the defervescents every half-hour. The stomach sometimes rejects these medicaments, and compels an interruption of the treatment before any result has been obtained. In such cases the gastric irritability may be quieted by the use of two granules of codeine every quarter of an hour. The same agent will relieve the pain by which gastritis is characterized, unless it is intense, in which case a granule of the hydrochlorate of morphine must be given every half-hour. The saburral condition, which often remains after defervescence has occurred, calls for one granule of quassine every two hours.

Constipation must be treated with Sedlitz; diarrhœa with two granules of brucine and two of codeine every two hours.

When the fever is high, delirium is sometimes developed; the treatment should then be eight granules of the bromide of camphor with sufficient aconitine every two hours. The cephalalgia which accompanies the fever will usually yield to aconitine; but, should it continue after the fever has disappeared, two granules of the citrate of caffeine may be given every half-hour.

In some cases the patients will get well much more quickly if an emetic is given at the beginning of the disease. Such cases are not usually pure forms of gastritis, but are rather subacute catarrhal conditions which are converted into febrile forms of gastritis. In such cases, therefore, we may give three granules of emetine, dissolved in warm water, every ten minutes until the desired effect is obtained.

In the more acute cases an emetic is rarely indicated. We should be guided in this matter by the condition of the tongue: if it is covered with a thick coating of a whitish or yellowish color, emetine is indicated; but if it is red at the borders and more or less dry at the center, vomiting may do much harm. Rather than excite vomiting in the latter class of cases, we should give aconitine and Sedlitz Chanteaud and expect the best results.

ACUTE GASTRITIS.	DOMINANT.	Inflammatory element.	Aconitine, veratrine.
	VARIANT.	Hyperthermia	Aconitine.
		Remittent fever	Hydroferrocyanate of quinine.
		Cephalalgia	Caffeine.
		Vomiting	Codeine.
		Pain	
		Saburral condition	Sedlitz Chanteaud, quassine.
		Diarrhœa	Codeine.
		Constipation	Sedlitz Chanteaud.
		Delirium	Bromide of camphor.

Gastritis, Catarrhal.—This affection (*embarras gastrique*) is a mild inflammatory condition of the gastric mucous membrane. It generally runs an apyretic course, and in itself is without gravity; but it may be transformed into an intense gastritis, into gastro-enteritis, or typhoid fever. It is one of those diseases which are held up by physicians who believe in the expectant method of treatment as an illustration of the uselessness of medical interference.

The frequency with which this disease is incompletely cured, or its cure is retarded, and the aggravated state which it sometimes assumes from the most insignificant causes, teaches us that it should never be neglected, but should be attacked as vigorously as if it were a severe disease from the beginning.

The saburral condition of the digestive organs is an indication for a saline laxative—for example, Sedlitz or citrate of magnesia—in order to relieve the intestinal canal of the alimentary detritus and the mucus which it may contain. Subsequently, as soon as possible, one or two granules of veratrine should be given every half-hour or every hour, according to the degree of tolerance. Usually the tongue becomes clean within twenty-four hours from the time that treatment is begun, the appetite returns, and a cure is evident. Veratrine has a particular action upon the gastric mucous membrane, producing a substitutive irritation and exciting the secretion of the gastric juice, which had been suspended.

If the appetite continues unimproved, however, and the stomach still performs its functions badly, the gastric atony being a hindrance to prompt and easy digestion, two granules of quassine should be given four times daily. The frontal or supraorbital cephalalgia, and the vertigo which are not of infrequent occurrence in these cases, will disappear after the administration of a few doses of the valerianate or the citrate of caffeine, two granules being given every half-hour. Vomiting, whether of spontaneous origin or provoked by the inappropriate use of veratrine, which will prevent us from continuing the use of that remedy until its desired effect can be obtained, may be treated with two granules of codeine and one of strychnine combined with the veratrine.

Imperfectly digested food or the irritant action of the gastric mucus will cause intestinal or hepatic hypersecretion, which will be manifested by a more or less abundant diarrhœa. This condition may be readily controlled by the suitable use of Sedlitz Chanteaud, with two granules of pepsin at each meal. Only such food as can be easily digested should be given while the secretion from the gastric glands is deficient—such foods, for example, as milk and soups, one or two granules of pepsin with each meal being given to supply the natural deficiency. The general debility which often follows this disease, however rapid its cure may have been, requires the incitant action of one or two granules of arseniate of strychnine three times daily. In some cases the use of food will excite a mild condition of fever; for such cases, three to five granules of the salicylate or the hydroferrocyanate of quinine should be given three times daily.

CATARRHAL GASTRITIS.	DOMINANT.	Inflammatory element	Veratrine.
	VARIANT.	Anorexia	Quassine.
		Vomiting	Codeine.
		Cephalalgia	Caffeine.
		Saburral condition	Sedlitz.
		Diarrhœa	Pepsin.
		General debility	Strychnine.
		Febrile attacks	Salicylate of quinine.

Gastritis, Chronic.—Chronic catarrh of the stomach results chiefly from two sources—atony of its contractile elements, and deficient secretion of the glands which furnish gastric juice. Difficulty in digestion, which arises from the combined action of these two morbid factors, aggravates the existing irritation and exaggerates the secreting power of the gastric glands which furnish mucus. The dominant will consist, therefore, in increasing contractility by means of brucine and strychnine, in facilitating digestion by the administration of pepsin, and in relieving the stomach of undigested food and unnecessary mucus by the administration of Sedlitz Chanteaud or emetine. To increase tonicity, hygienic means are not less efficient than treatment by means of drugs. Not only should the stomach be relieved of excessive labor, but its ordinary function should be assisted, if possible, in order that such an economy of work may be transformed into a capitalization of force. The sense of weight in the region of the stomach, which patients with this disease experience after eating, almost always comes from the feeble contractile power of a dilated stomach. This disagreeable condition may be relieved by the very moderate use of food and drink, and the administration of three to five granules of euonymine or elaterine with each meal. The pain which accompanies intestinal digestion may be relieved by the use of three granules of codeine or cocaine every half-hour. Palpitations and yawning are reflex phenomena which result from the pressure of gas which has been generated in the stomach. Two or three granules of strychnine, three times daily, will furnish the best means for relieving them, as the resistance of the muscular coat of the stomach will thereby be increased and distention prevented. The effect of this treatment will also be to ward off hypochondria, from which patients with this disease so frequently suffer. Acid eructations are the result of fermentation in the stomach. For their relief, two or three granules of the arseniate or the salicylate of soda may be given, three times daily, or the alkaline mineral waters may be used. Vomiting of the food should be treated with three granules of pepsin with each meal. It is almost always due to deficiency of the gastric secretion. Vomiting which is due to an excess of mucus in the stomach may be treated with two to five granules of quassine, an hour before each meal. The same drug will improve the appetite in cases in which there is repugnance to food; but, if the loss of appetite is due entirely to disrelish for food on account of buccal catarrh, two granules of veratrine, half an hour before each meal, will give prompt results, and will also overcome constipation, which may coexist. The cephalic congestion which accompanies the work of digestion, and which is the cause of headache, vertigo, etc., requires two granules of aconitine before each meal, and two of caffeine or guaranine every half-hour until the desired effect is obtained. Flatulence of intestinal origin is due to inertia of the muscular fibers which enter into the structure of the intestine. The excito-motor agents, which have a tonic action upon the intestine, are indicated for this paresis. Two granules of strychnine may be given three times daily, or three of jalapine or of colocynthine with the same frequency. The diarrhœa should be treated with three granules of brucine or of narceine every two hours. Constipation requires different remedies, according to the exciting cause. Usually it may be corrected by using two to four granules of podophyllin or veratrine every evening, and a small spoonful of Sedlitz Chanteaud in the morning. Hypochondria, which has a decided tendency to produce disrelish for the food, and to make the digestion sluggish, should be treated by moral stimulation, exercise, and two or three granules of hyoscyamine daily. Chronic gastritis, in the absence of irremediable lesions, can always be cured by a proper choice of remedies, and by perseverance in their use, and in a hygienic regimen for a sufficiently long period.

CHRONIC CATARRH OF THE STOMACH.	DOMINANT.	Atony	Strychnine.
		Insufficiency as to the secretion of pepsin . .	Pepsin.
		Excess as to the secretion of mucus . . .	Sedlitz Chanteaud.
	VARIANT.	Feeling of heaviness .	Euonymine, elaterine.
		Pain.	Codeine, cocaine.
		Palpitations . . .	Sulphate of strychnine.
		Yawning	
		Eructations . . .	Salicylate and arseniate of soda.
		Cephalic congestion .	Aconitine, guaranine, caffeine.
		Vomiting.	Pepsin, quassine.
		Anorexia	Quassine, veratrine.
		Intestinal flatulence .	Sulphate of strychnine.
		Diarrhœa.	Brucine, narceine.
		Constipation . . .	Podophyllin.
		Hypochondria . . .	Hyoscyamine.

Glossitis.—Inflammation of the tongue may be superficial or deep. If it is superficial, it is not a condition of any particular gravity, and may be relieved by the use of a few granules of aconitine, which will act upon the inflammatory condition. The case is not the same if the inflammation is extensive, for then suppuration frequently follows, and the patient may die of asphyxia. In such cases prompt interference is required, for the progress of the disease is rapid. Medicaments must be given in solution, and as frequently as the severity of the case demands. The fever, which is sometimes very high, may be relieved by the use of one granule of aconitine every quarter of an hour until defervescence results. A concentrated solution of cocaine (1:15) should be used locally to relieve pain, and also to produce ischæmia in the tongue. Ptyalism may be relieved by the use of one granule of atropine every two hours. Suppurative glossitis calls for the use of iodoform and arseniate of quinine, two granules of each being required every two hours. Should the volume of the tongue be greatly increased, it will not only prevent deglutition, but it will also interfere with respiration, and this condition will be aggravated by the compression which is exercised upon the vessels by inflammation of the cervical glands, which may occur simultaneously. If asphyxia is imminent, the swollen tongue should be relieved as rapidly as possible, either by deep scarifications, or by the application of leeches to the organ itself or to the retro- and submaxillary regions. In extreme cases tracheotomy should be performed as the last resort to prevent fatal asphyxia.

GLOSSITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Fever	Aconitine.
		Pain	Cocaine.
		Ptyalism	Atropine.
		Suppuration	Iodoform, arseniate of quinine.
		Asphyxia	Leeches, incisions, tracheotomy.

Goitre, Exophthalmic (*Basedow's Disease*).—The primordial lesion in exophthalmic goitre is in the sympathetic system. In consequence of this, the dependent cardiac and cervical vaso-motor action is paralyzed, and dilatation of the arteries which are controlled by these nerves follows. The means which should be used in the treatment of this paralysis are ergotine and sulphate of quinine in large and long-continued doses. The two agents may be associated, but it is better to use them alternately from week to week, giving, for example, three granules of strychnine three to five times daily for two or three weeks, and then five granules of ergotine three to five times daily for an equally long period.

Should the tonics to the vascular system be ineffective, the palpitations may be relieved by the use of two granules of digitaline three or four times daily, until relief is obtained. The vascular ectasis may be benefited by the use of three granules of cocaine three to five times daily, its astringent action re-enforcing that of the dominant. The exophthalmia, which depends upon the same fundamental cause, and is a source of great annoyance to the patient by reason of the lesions which produce insufficiency of the eyelids, demands the use of morphine combined with the dominant, and two granules should be administered every quarter of an hour. If by the use of this agent the cephalic troubles are increased, it should be replaced by the sulphate of calabarine, three granules of which may be given three or four times daily. Conjunctivitis, which will appear sooner or later as a result of exophthalmia, should be treated with aconitine three or four times daily. Dyspnœa will be diminished by the use of one granule of cicutine or of valerianate of atropine every half-hour. Insomnia should be treated with two granules of the bromide of camphor, or of Gregory's salt, every quarter of an hour, until a hypnotic effect is obtained. The delirium, which may be more or less accentuated, is caused by hyperæmia of the cranium, consecutive to cerebral excitation. One granule of hyoscyamine given every hour will almost always restore rest in the two hemispheres. Vomiting, which may be due to changes in the sympathetic, or is a symptom of cerebral disorder, requires the use of one granule of atropine every quarter of an hour, combined with three granules of quassine. The hæmorrhages, which are very frequent in the last stage of this disease, being the necessary consequence of the vascular atony and the prolonged ectasis, should be treated with subcutaneous injections of ergotine, the following formula being suggested, viz.:

Ergotine (Catillon's).........	1	gramme.
Distilled water..............	12	grammes.
Glycerin....................	3	"

If the granules are preferred, three may be given every quarter of an hour. The anæmia, which is sometimes the cause and sometimes the effect of the disease, should be treated with two or three granules of the arseniate of iron, three times daily. Hygienic measures, based upon the pathogenic idea of the disease, will consist in rest for the body and the mind, without entirely excluding attention to the affairs of life, in a moderate amount of exercise, and, in the early stages of the disease, in hydrotherapy. Stimulants should be avoided, as their use is always followed by depressing effects; this remark applies to tea, coffee, alcohol, tobacco, and strong condiments. The diminution of the work of the digestive apparatus has an important bearing upon the restoration of the functional force of the sympathetic. The diet should be nourishing in character and abundant in quantity, but the food should always be readily digestible.

EXOPHTHALMIC GOITRE.	DOMINANT.	Paralysis of vaso-motor nerves	Ergotine, strychnine.
	VARIANT.	Palpitations	Digitaline.
		Vascular ectasis	Cocaine.
		Exophthalmia	Morphine, strychnine.
		Conjunctivitis	Aconitine.
		Dyspnœa	Cicutine.
		Insomnia	Bromide of camphor.
		Delirium	Hyoscyamine.
		Vomiting	Atropine, quassine.
		Hæmorrhage	Ergotine.
		Anæmia	Arseniate of iron.

Gout.—This specter to the rich and scourge to the sensual is tending to disappear in proportion as equality is being attained by the subdivision of capital and labor. We are yet far from the ideal of the socialists, however, and for that reason the disease still prevails with a certain class of people who require more work of their stomach than of their hands. The etiology and pathology of gout may be sketched in a few words, in accordance with the observation of the past and the present. Diminution of exercise and excess in the use of food results in an incomplete combustion of azotized matter, which accumulates in the blood and determines an excessive development of uric acid, which is the efficient cause of the disease. This is not the only cause for the accumulation of uric acid, however, for its production may be normal in quantity, and uricæmia be established, owing to deficient elimination on account of renal lesions. The system being saturated with uric acid and with nitrogen, and the usual emunctories being no longer capable of eliminating them, the work is forced upon other organs, which are unused to the task, and in which the patient experiences more or less violent pain, inflammation, etc. There is, therefore, for gout, an efficacious preventive treatment, purely hygienic in character, and consisting, as to its details, in abundance of exercise and spare diet, especially with reference to nitrogenous food. This plan of treatment would be equally curative if habits of intemperance were not so difficult to overcome. If we could inspire the patient with the passion of avarice, or convince him that his bad habits should be given up, as the causes of his disease, we would accomplish more for him than by prescribing all sorts of drugs for the cure of gout. In the plan of treatment all dangerous and inefficient remedies must be avoided, as they will only tend, by prolonged use, to intensify the disease and increase the disorder of the digestive apparatus. The therapeutics of gout will be reduced to very narrow limits if we wish to make use of the only remedy which is really of any service. Colchicum is considered by many as a specific for this disease, and it is the only substance the results of which are not too uncertain. The variability in its composition and its activity, whether given in substance or in the various preparations which are in the market, have led many practitioners to abandon its use in favor of a more or less disguised expectant plan of treatment. Colchicum acts principally by its analgesic, defervescent, and cholagogue properties. The last of these explains the efficiency which it sometimes has in gout. The influence of the liver upon the production and excretion of urea is well known, and therefore all substances which have a perceptible influence upon the secretion of bile have an action which is no less apparent upon the coefficient of uric acid which is contained in the blood. Whatever be the mechanism of the action of colchicum, its advantageous results are undeniable, and it would be used more frequently were it not for the disadvantages which have been alluded to, in the specimens which are obtainable. None of these disadvantages appertain to colchicine. That which can be said of it in respect to the treatment of rheumatism is equally true with reference to gout. It is quite true that colchicum contains other alkaloids in addition to colchicine. What difference does that make, however, if colchicine contains all the advantageous and none of the disadvantageous properties? Let us disregard colchiceine and the other alkaloids, of the properties of which we are ignorant, but continue to use colchicine, with the action of which we are acquainted, and of which we could not deprive ourselves without at the same time being disarmed in the presence of two common and painful diseases, for which our patients demand a prompt relief. The curative treatment of gout means the treatment of the attack. But by *attack* we should not only understand the eliminative process which is localized in the articulations, but also the visceral troubles, of variable form, which precede it or alternate with it. The attack is manifest when the quantity of uric acid becomes excessive. We should therefore strive to increase its elimination by all the passages when the organism begins to yield to the uricæmia. The diuretics, purgatives, and diaphoretics are useful so long as the attack is not well pronounced, but after that point has been reached the cholagogues alone will give results which are appreciable. The attack is almost always announced by disorder of digestion. If we are wise enough to interpret the cause of the dyspepsia, and do not allow the *golden moment* to pass by, we may succeed in aborting the attack by means of a simple purgative. Among the different purgative agents, podophyllin should be given the preference on account of its decided cholagogue action. Five-granule doses, three or four in number, may be given at intervals of half an hour in the evening, before the final meal, and the following morning a small dose of Sedlitz Chanteaud will excite diuretic action and increase the purgative action of the podophyllin. Should we be unsuccessful in aborting the attack, or should we not have time to prevent it, we should begin the use of colchicine, administering two granules every two hours until either a purgative or an emetic effect has been obtained. This effect of the alkaloid should not frighten us, but, on the contrary, should be considered desirable, for it always coincides with a notable remission of all the symptoms. After this result has been obtained we should give only a single granule every two hours, and, should the diarrhœa or the vomiting still continue, we should give a single granule only once in four hours, and continue this plan until a cure has resulted. In cases in which colchicine is not appropriate we can substitute aconitine, which has analogous but less decided properties for the relief of gout. After the attack is over we should institute a hygienic and pharmaceutical treatment of such a character as to prevent a new accumulation of uric acid, which would occur with the greater rapidity as the elimination of the deleterious urates at the previous attack was less complete. A few words may be said with respect to the pharmaceutical treatment. Acute gout should be treated with alkaline waters, with the alternate use of three granules of the carbonate or the benzoate of lithia, three times daily. Atonic gout should be treated with the bitter tonics, three granules of quassine or euonymine being given before each meal. The variant consists in the use of calmatives and sedatives, two granules of codeine, tannate of cannabine, or gelsemine, being given every half-hour should the pain become unendurable. For insomnia we should give three granules of bromide of camphor combined with three of Gregory's salt every quarter of an hour until we get the desired result. To patients who can not endure the morphine in Gregory's salt we should give croton chloral in similar doses. Dyspepsia should be treated by the daily use of Sedlitz Chanteaud, or by three granules of salicylate of soda or of quinine before each meal. Diminution in the quantity of urine voided should be treated by the use of one granule of digitaline every two hours during the inflammatory period. It should always be remembered that the renal functions in gouty patients are badly performed, and that an accumulation of medicinal substances in the blood may be easily accomplished. Still that should not prevent us from giving them the drugs which are suitable to their condition, but the doses should be diminished and their effect should be carefully awaited. This result is reached the more quickly as the functions are less perfectly accomplished. Should the other physiological effects of digitaline appear before its diuretic effect, three granules of asparagine may be substituted in its place every hour, or three of arbutine every two hours. The visceral manifestations in this disease are varied in character. The nervous system is most frequently affected, under the form of migraine, which should be treated with two granules of guaranine every hour. The respiratory apparatus may also be attacked under the form of asthma, for which we should give one granule of aconitine every two hours. If the muscular system is affected under the form of myosalgia or paralysis, we should give two or three granules of veratrine every two hours.

GOUT.

DOMINANT.	Preventive and curative treatment during the remissions		Exercise, temperance, alkaline mineral waters, carbonate or benzoate of lithia.
	Curative treatment during the attacks .	At the beginning . .	Podophyllin. Sedlitz Chanteaud.
		Subsequently	Colchicine, aconitine.

VARIANT.	Atony		Quassine, euonymine.
	Articular pains		Gelsemine, tannate of cannabine.
	Insomnia		Bromide of camphor, croton chloral, Gregory's salt.
	Oliguria		Digitaline, asparagine, arbutine.
	Visceral gout	Migraine	Guaranine.
		Asthma	Aconitine, benzoate of soda.
		Myosalgia	Veratrine.

Hæmoptysis.—See Broncho-pulmonary Hæmorrhage (under *Hæmorrhage*).

Hæmorrhage, Broncho-Pulmonary.—Pneumorrhagia differs from bronchorrhagia only in respect to anatomical situation, prognosis, and extent—as to symptomatology and therapeutics, they may be considered in the same chapter. The fundamental cause of hæmorrhage consists in a want of equilibrium between the resistance of the walls of the vessels and the intravascular pressure. Since we can not change in an instant the structure of the vascular tunics, we are limited to the exercise of our influence upon their vitality, and this may take form by exciting the contractility of their muscular elements or by diminishing the intravascular pressure, either the energy of the current being reduced or the crasis of the blood being modified. Ergotine or strychnine will fill the first indication, aconitine the second, aconitine and the depletives the third. Broncho-pulmonary hæmorrhage is the result of hyperæmia or of disorganization of the walls of the vessels on account of ulceration, atheroma, etc. Hæmorrhagic hyperæmia may be either active or passive. The former indicates aconitine, which opposes itself to the hæmorrhagic molimen, that is, to the fluxion which appears in the form of hæmorrhage; one granule of it may be given every half-hour. The second requires digitaline, to aid the heart in overcoming the stasis; one granule may be given every hour, its action being reenforced by one granule of the sulphate or arseniate of strychnine every quarter of an hour. The hæmorrhages which are due to lesions of the vessels require ergotine hypodermically, one gramme of water being used to dissolve ten granules of ergotine ; or the ergotine may be given by the mouth, three granules being given every quarter of an hour until the desired effect is obtained. The hæmorrhages which come from large vessels will not readily yield to such means, for the large vessels are poorly supplied with contractile elements ; still this is the best remedy which we have, and should be employed, for we have no means of deciding as to the size of the vessel from which the hæmorrhage proceeds. The cardiac excitement which almost always accompanies these hæmorrhages should be soothed by the use of three granules of veratrine every quarter of an hour until the contra-stimulant effect has been obtained. Although this agent acts indirectly, it acts more rapidly than ergotine. One or the other may be used, according to circumstances, but in severe cases we should use both. Adynamia, which may precede or follow hæmorrhage, requires the use of two granules of strychnine every three hours. The cough, however mild it may be, is an obstacle to coagulation and to hæmostasis. It should be soothed by the use of two granules of morphine every quarter of an hour. Dyspnœa, which indicates an obstruction in the air-passages by the blood which has been extravasated, may be quickly overcome by giving five granules of emetine in a teaspoonful of water every ten minutes, until vomiting or nausea results. The clots which are retained in the alveoli will, sooner or later, give rise to a circumscribed pneumonia, which may terminate by suppuration or by ulceration, and is rarely susceptible of cure. The prognosis should therefore be a guarded one, and the physician should be in readiness to apply the proper remedies with the first evidence of phlogosis. The most useful means which can be used are the defervescents, the revulsives, and, during the period of suppuration, iodoform with the arseniate of quinine, two granules of each being used three to five times daily.

BRONCHO-PULMONARY HÆMORRHAGE.	DOMINANT.	Hæmorrhage from active congestion . . .	Aconitine.
		Hæmorrhage from passive congestion . . .	Digitaline.
		Hæmorrhage from vascular lesions	Ergotine.
	VARIANT.	Cough	Morphine.
		Dyspnœa	Emetic.
		Cardiac erethism . .	Veratrine.
		Adynamia	Strychnine.
		Subsequent pneumonia .	Defervescents. Iodoform, arseniate of quinine.

Hæmorrhage, Cerebral.—How should cerebral hæmorrhage be treated? The rational reply would seem to be that it should be treated both as a hæmorrhage and as a cerebral disease. Unfortunately, such a plan is not usually followed. Every one seems to forget that apoplexy is one of the forms by which cerebral hæmorrhage is manifested, and hence, one of the principal elements of the disease being overlooked, the treatment always gives results which are uncertain, negative, or disastrous. How can we explain otherwise that, in a disease which is so severe and so well understood as to its pathogeny, its pathology, and its symptomatology, there should be so much disagreement among physicians, so that their plans of treatment, in which no one has any confidence, succeed rather by chance than as a result of conscientious and considerate application? Trousseau, earnest though he was in seeking to find a specific for every disease, declines to indicate a treatment for sufferers from apoplexy, whatever be their condition, thereby showing his practical good sense, for apoplexy is a disease in which the excitement of any form of disturbance is not an insignificant matter; and, as Trousseau recognized that all such disturbances must be useless, he declares that they must at the same time be dangerous. This is the only way that we can understand and explain the fact that so tireless a worker as Trousseau should advocate an expectant plan of treatment, folding his arms in the presence of so formidable a disease, while there was every inducement from without to attack it in some way or other. It would appear, however, that it is not necessary to make a very long search for the plan which should be adopted, in order to do what is possible for the relief of this terrible accident. Is not cerebral hæmorrhage a true hæmorrhage? Is it not that which gives to the disease all its gravity? Is it not a drop of blood, more or less, effused into the brain, upon which the life or the death of the patient depends? But, if cerebral hæmorrhage is a true hæmorhage, why should it not be treated as a hæmorrhage? If in metrorrhagia, epistaxis, or hæmoptysis, when the loss of a few grammes of blood, more or less, is not a matter of vital importance, the great object is to arrest the flow, why should we not have the same object in view in cerebral hæmorrhage, when death may result from the loss of one drop or even one globule of blood beyond the limit of endurance? The first indication is, therefore, to arrest the hæmorrhage. How? Why, just as one arrests other hæmorrhages, with this conviction in addition, that there must be no experimentation in the matter. The substance chosen must be an active hæmostatic; the preparation which is used must be thoroughly reliable; the avenue along which it is directed must insure the utmost freedom and rapidity of action. In menorrhagia we are in the habit of using ergot of rye, or its active principle ergotine, if we desire a rapid effect. This is the substance, in fact, which will cause hæmostasis of the parenchymatous vessels with the greatest rapidity; it is, therefore, the remedy which should be employed in every case of apoplexy. While it is very active as a medicament, it has, however, two great disadvantages: The first, common to all vegetable preparations, is that it never contains fixed quantities of the active principle, so that it is never possible to say with precision just what result will be obtained from the use of a given quantity of a given preparation; the second disadvantage is that it has a harmful influence upon the brain, paralyzing the action of the nervous system upon all the organs.*

Ergotine, while it does not have the second of these disadvantages, does have the first.†

Ergotine, in fact, is not an alkaloid, but an extract which contains a variable quantity of its active principle, and is capable of being decomposed by the digestive fluids. The ergotines of Bonjean and Yvon are the ones which represent this variability of action most faithfully. The ergotine of Catillon is the nearest approach, as to uniformity of action, to the alkaloids, and should therefore be preferred. Ergotinine is another preparation which is available, but its great activity prevents its satisfactory use. How should ergotine be administered in order that its effect may be immediate? The stomach can not be relied upon in a condition like this, for, with the existing prostration of the vital forces, we can not expect much in the way of absorption. In the apoplectic state, it may be reduced to the slow action of osmosis. Preference should therefore be given to the hypodermic method, the medicament, in solution, being injected into the cellular tissue. The effect by this method is obtained more rapidly than by any other. A hypodermic injection of Catillon's ergotine having been made, we can be sure of arresting the hæmorrhage as quickly as possible, thus satisfying the causal indication. But, since this hæmorrhage has taken place in cerebral tissue, its effects will disclose a characteristic physiognomy, and will call for a particular treatment. The shock which is experienced by the central nervous organism will disturb its functions to the extent of suspending animal life. All vital acts which are accomplished under the influence of the cerebral centers are more or less affected; and, by thus tending to change the condition of the blood, the effect of the change is experienced in a reflex manner by the nervous system. It is therefore of great importance to restore to the nervous centers their incitability, and to preserve at the same time the normal composition of the blood. In this emergency we can obtain assistance from caffeine and its salts, the arseniate of strychnine, the cutaneous revulsives, and the intestinal derivatives. All excitants and debilitants should be absolutely avoided, for we may be sure that these antagonistic substances will facilitate the way to the most unfavorable result of apoplexy—that is, to cerebral softening. The treatment of apoplexy from cerebral hæmorrhage may be formulated as follows, viz., we should inject into that side of the head in which, judging by the deviation of the eyes, the head, and the tongue, the effusion has occurred, one gramme of a ten-per-cent solution of Catillon's ergotine. Every quarter of an hour we should administer one granule of arseniate of strychnine, and one of caffeine or its salts. Sinapisms of moderate strength should be applied to the arms, the thighs, the body, and the nucha. If at the end of three hours the patient has not regained consciousness, we should repeat the ergotine as well as the granules until the desired result is obtained. After the apoplectic condition has passed away, a dose of Sedlitz Chanteaud may be given to excite purgation, and the treatment may be begun which is designed to prevent the fever which accompanies the reparative encephalitis. This will consist in the use of one granule each of aconitine, veratrine, and hydroferrocyanate of quinine every three hours. The hæmostatic action should be kept up by the use of two granules of ergotine every three hours. The diet should be spare, but sufficient in quantity and quality to sustain the strength of the patient. After the fever has set in, defervescent treatment must be adopted, and regulated according to the intensity of the pyrexia. After the fever has been overcome, the treatment which is appropriate for paralysis must be established by means of brucine and strychnine, and, to prevent recurrences of the attack, by ergotine.

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* Chevallay, in autopsies made upon animals poisoned with ergot of rye, constantly found engorgements of blood in the skull, the spinal canal, and the venous system, which demonstrated the stupefying action of the drug. This fact caused Bonjean to rank ergot among the narcotics as the equal of opium.

† Ergot of rye contains two very dissimilar active principles—a remedy and a poison. The first is ergotine, which possesses all the properties which are serviceable in obstetrics and as a hæmostatic in general. It may be administered in as large doses as eight grammes without producing toxic effects. The second of these principles is a fixed, colorless oil, which is soluble in ether and insoluble in alcohol; it can be isolated perfectly from the first, and contains all the properties which affect sensation. The reader is referred for further information upon this subject to an article by Van Renterghem in the "Compendium du Médecine dosimétrique," pp. 480–515.

CEREBRAL HÆMORRHAGE.	DOMINANT.	Hæmorrhage . . .	Ergotine.
	VARIANT.	Want of equilibrium in the nervous system . .	Caffeine and its salts, arseniate of strychnine.
		Constipation . . .	Sedlitz Chanteaud.
		Fever	Veratrine, aconitine, hydroferrocyanate of quinine.
		Paralysis	Brucine, strychnine.

Hæmorrhoids.—Hæmorrhoidal lesions always begin in the form of simple congestions. Repeated venous hyperæmia results in dilatation of the veins, which continue to increase in size until true varices are formed. The congestion is due to causes which habitually give rise to congestion, but the dilatation of the veins, which really constitutes hæmorrhoids, is caused primarily by a relaxation or atony of the vessels, which should be treated with two granules of ergotine and two of strychnine four times daily. The primary rectal congestion, as well as the hæmorrhagic molimen, requires the use of one granule of aconitine every two hours. Hæmorrhoids which are caused by the compressing action of abdominal tumors can be effectively treated only by the removal of the cause. When this compression is the result of a hardened fecal mass, the existing constipation may be corrected by the daily use of Sedlitz Chanteaud, which, in addition to its laxative property, has also the effect of stimulating the blood in respect to its affinity for oxygen, and of relieving the engorgement of the venous system. The pains which precede the hæmorrhoidal attacks, which are more or less intense in character, and can not be definitely located, may be soothed by using one granule of gelsemine or aconitine every hour. Dysuria will disappear if one granule of daturine is used every two hours until a number of doses have been taken. The spasm of the *sphincter ani* may be treated with the same agent, or with one granule of hyoscyamine every half-hour. Hæmorrhage from the rectum is rarely beneficial, for it almost always increases the relaxation of the veins, and conduces to anæmia. Three granules of ergotine may be given for this condition every hour. A topical disinfectant application for hæmorrhoids after they have reached a gangrenous or ulcerated condition may be made from vaseline thirty parts, pure iodine one part. The congestion of the rectum may be quickly relieved and the local vascular erethism assuaged by the use of very hot enemata (40° to 45° C.). Small pieces of ice introduced into the rectum will also give good results, but should be reserved as a hæmostatic for obstinate hæmorrhages from the rectum. The curative treatment for the hæmorrhoidal tendency must be continued for a long time, and may be carried out after the following plan: In the morning a dose of Sedlitz Chanteaud dissolved in a large quantity of cold water may be given. Two granules of ergotine may be given before each of the two principal meals, and on alternate weeks the same quantity of sulphate of strychnine may be substituted for each dose. Upon retiring, two granules of aconitine may be given with two of digitaline. Stimulants should be abstained from, and very active exercise should be taken. If, in spite of the use of Sedlitz Chanteaud, constipation continues obstinate, three granules of podophyllin may be used every evening, or ten of leptandrin every morning with the Sedlitz Chanteaud. Grave hæmorrhoidal lesions, whether due to the frequently recurring hæmorrhages, and the inflammations which are associated with them, or to the spasmodic or mechanical difficulty which has interfered with regular defecation, require surgical treatment. One of the most efficacious and least dangerous of such means consists in the forcible dilatation of the sphincter, the patient being anæsthetized.

HÆMORRHOIDS.	DOMINANT.	Congestion	Aconitine.
		Atony	Strychnine.
		Compression	Sedlitz Chanteaud.
	VARIANT.	Pseudo-neuralgia	Gelsemine.
		Dysuria	Daturine.
		Spasm of the sphincter	Hyoscyamine.
		Rectal congestion	Aconitine.
		Rectal hæmorrhage	Ergotine.
		Gangrene, ulceration	Antiseptics.

Heart, Dilatation of the.—See Cardiectasis.

Heart, Valvular Lesions of the.—There is no class of diseases which proves better than this the necessity that a true plan or system of therapeutics should be directed solely at vitality. In cases in which there are lesions of the cardiac orifices, therapeutics is completely disarmed in so far as any ability to modify them is concerned. It does intervene, however, and it is right that it should do so, but in a purely dynamical manner. Thus it acts upon the cardiac muscle in its functional capacity, moderates or excites it, according to the exigencies of the condition, and so compensates in an indirect manner for the organic lesions which are manifestly irremediable. In how many cases does endocarditis become chronic, after having passed a more or less acute stage—cases in which it might have been made to disappear without leaving any traces if the morbid phenomena had only been controlled at the beginning of the disease! It is painful to see the time for intervention slip by without anything being done, and the means of relief reserved for the last stages of the disease. However active those means may be, they can then only give results which are ephemeral and insufficient. These lesions will be referred to in this article as the *organic lesion of the orifices*, without particular specifications, for the therapeutic indications are the same, whether there be stenosis or insufficiency, whether the obstacle to the circulation is in one cavity or the other, or at the point of communication of the heart with the great vessels. This organic lesion requires to be studied in each of the morbid phases which it induces in the cardiac muscle. The resistance which the heart experiences in forcing the blood into the circulatory tree calls for efforts which are too great for the organo-functional equilibrium. The repetition of these exaggerated contractions gradually leads to muscular hypertrophy. The contractile elements, in order that equilibrium may be restored, are developed in excess, compensation being established at the price of a new lesion, which corrects the first. In cases in which pregnancy obtains, as the obstacle disappears at the time of delivery, the hypertrophy will also cease, and the cardiac muscle will regain its former structure and force. An exaggeration of dynamic capacity produces a lesion of structure, which disappears when the requirements are lessened. A clearer example (than this disease) could not be found of the process by which chronic diseases are established, nor a more evident indication of the course which should be followed in order to cure them, namely, to excite vital modifications. As the extent to which hypertrophy may be carried is limited, the organ will become fatigued should the resistance continue; the muscular nutrition then becomes perverted, and granulo-fatty degeneration is the result. Then the contractile energy diminishes; the heart is no longer able to force the blood with the same facility through the open orifices, nor to contract with sufficient force when the blood accumulates in its cavities, on account of the insufficiency of the valves. The lesions are no longer compensated, and asystole begins. Therapeutic intervention has not the same effect in these two different phases of organic lesions, or the perturbations which they produce. They must, therefore, be considered separately.

Compensatory Lesions.—The treatment for compensatory lesions is entirely of a preventive character. The patient experiences no suffering, and all the functions are performed with regularity. But the compensatory process can not continue indefinitely, and will end the quicker as the heart becomes the more fatigued in its work. Hygienic methods exercise a preponderant influence in this condition. Every exciting moral impression, all functional excitement from physical overwork, should be carefully avoided. Exercise should not be violent, fatigue should be warded off as much as possible. A temperate climate in a level and shady locality should be selected for a home, and the patient should not be obliged to climb stairs. No stimulating food should be used—no coffee, tea, or alcohol. The diet should be a spare one, that the circulation may not be interfered with by dilatation of the stomach. The use of tobacco should be limited to a very small quantity, or should be given up altogether. The condition of the blood must be improved as much as possible by the use of suitable food, or by giving one granule of the arseniates of iron and antimony three times daily. Fatigue arising from overwork in the contractility of the heart-muscle may be relieved by giving three granules of the arseniate of strychnine every evening as an incitant. Two to four granules of aconitine and digitaline, taken as calmatives every evening, will make the heart less sensitive to the action of stimulants, whether of internal or external origin, which can not be avoided in the course of ordinary life. Aconitine and digitaline, even in very small doses, have an effect which is decidedly favorable; and this is not suprising when we reflect upon the bad effects which are sometimes produced by apparently inoffensive stimulants like tea, tobacco, etc., notwithstanding the fact that we may have been using them habitually.

NON-COMPENSATORY LESIONS.—When, in spite of muscular hypertrophy, the cardiac impulse is no longer sufficiently forcible to overcome the obstacle at the mitral opening, the blood begins to stagnate, and this condition gradually extends to the entire circulatory system. From this stagnation, passive congestions in different organs result, their functions being profoundly changed; and the morbid state is the more aggravated as the congestions take place in important organs. The congestions induce dropsical conditions in various parts, and the patient usually dies as a result of these. Life ends, therefore, as the result of a series of perturbations, the first of which is insufficiency of the cardiac energy, and the last the dropsical infiltration of all the tissues. By avoiding the first of these, by successfully opposing the tendency to failure of the systolic power, we can prevent at the same time the appearance of all the other morbid phenomena. The fundamental indication is therefore to increase the energy of the heart by inciting its vitality, and by preserving its muscular integrity and the force of its innervation. Medication of a neurosthenic character should therefore be established, with the precaution that incitation and not excitation is required, for the latter will give only a transitory advantage which will soon be followed by vital depression. When the period of compensation has passed, we must try to restore the equilibrium by the use of heart tonics. Digitaline, strychnine, and guaranine are the means which should be used in combination or alternately, according to the exigencies of each case. Digitaline may be given in two-granule doses two or three times daily; it may be associated with caffeine, five granules being given with each dose, and the quantity may be gradually diminished as the pulse indicates greater vigor and regularity in the cardiac action. In order to sustain the regulating action of the digitaline, three granules of strychnine may be given every other night, five of guaranine being given on the alternate nights. Should the conditions of congestion become aggravated, the situation will become less hopeful, for all visceral complications are significant. Should stasis of the cerebral circulation occur, there will be a constant tendency to somnolence, for which we should give two granules of the valerianate or the arseniate of caffeine every half-hour, but without discontinuing the strychnine and digitaline. In some cases there is, on the other hand, persistent insomnia, for which relief must be given as speedily as possible. Two granules of cicutine may be given hourly, or three of croton chloral every half-hour. With very nervous people it may be better to give the bromide of camphor in three-granule doses every quarter of an hour until a hypnotic effect is obtained. Delirium in these cases may be best treated with digitaline, if the heart is susceptible of its regulating action; otherwise, two granules of aconitine or hyoscyamine may be given three or four times daily. Uræmic accidents, which should not be confounded with the phenomena of delirium which result from cerebral stasis, are the result of renal lesions, and require to be treated with saline laxatives. Pulmonary congestion requires the use of revulsives, or one granule of aconitine combined with one of strychnine every hour. The manner in which the urinary function of the kidneys is performed during the administration of alkaloids must be carefully watched; not with the view of discontinuing their administration, however, for they always give good results, but to calculate approximately the rapidity of their action, so as to be informed as to the probability of their accumulation, and to anticipate surprises, which, however, can never be irreparable if one practices the dosimetric method. This caution is necessary, because we can obtain the desired result with much smaller doses than would be required if the kidneys were performing their function physiologically. Thus, in cases in which there is albuminuria and a considerable diminution in the quantity of urine discharged, not more than three or four granules of aconitine should be given; while, if diuresis is in a normal condition, one granule may be given every hour until the desired result is obtained. Expectoration may be modified by the use of three granules of the benzoates at intervals of three hours, or one of atropine three times daily. Cough requires narceine, codeine, or Gregory's salt; two granules may be given every half-hour. Hæmoptysis should be treated with three granules of ergotine every quarter of an hour, or, if the case is urgent, with hypodermic injections. Hepatic congestion may be rapidly modified by the use of cholagogues. Two dessertspoonfuls of Sedlitz Chanteaud should be dissolved in half a litre of water and taken, and at intervals of an hour three granules of podophyllin may also be given. In twenty-four hours it will be found that the volume of the liver is much diminished. Likewise two granules of colchicine may be used hourly until a drastic effect has been obtained, but the result of this treatment is not so positive; it is better to reserve it for those cases in which icterus is present. The regular use of Sedlitz Chanteaud should be advised during the entire course of these diseases, for, by its purgative and diuretic effect, it retards the progress of the lesions and tends to prevent complications. Dropsy is the natural consequence of the congestions which characterize heart lesions. On the one hand, we should seek to increase the tonicity of the heart, and, on the other, to excite such action as will produce the removal of the effused serum. The skin, the kidneys, and the intestines are the three avenues along which this action must be accomplished. The means for producing diaphoresis are very uncertain, and should they be retained they may exert a very harmful action upon the heart. In cases in which diaphoresis is indicated by so powerful an agent, we may use six granules of nitrate of pilocarpine every ten minutes until the result is obtained, or five milligrammes may be given hypodermically every quarter of an hour. Aconitine will produce diuretic effects which are more constant, but at the cost of cardiac depression. Diaphoresis having been produced, we should at once give sulphate of strychnine in order to attenuate the disadvantages of the diaphoretics, and preserve the advantage which has been gained. Two granules may be given every hour. Diuresis may also be excited by a milk diet, which is especially advantageous if albuminuria is present, and by the use of arbutine at intervals of two hours. The same agents which were recommended to relieve hepatic congestion may also be used to excite the discharge of the dropsical effusions by way of the intestines. While these means are being used we should be especially careful that the strength of the patient be not thereby drawn upon to any important extent, and that the digestive power be maintained, for otherwise asystole, which is always imminent, would be precipitated. Nothing need be said at this time concerning the various procedures in the way of local treatment for dropsy. Such methods include paracentesis, puncture, the use of capillary cannulæ, etc., and are all sufficiently well described in the classical works on medicine and surgery. The object of this article is simply to indicate the method of treatment according to the dosimetric system. Lesions of the aortic orifice differ sufficiently as to their symptomatology and their treatment to merit separate consideration. When obstructive lesions of this orifice are compensated by hypertrophy, the resulting disturbance is not severe, but aortic insufficiency will rapidly give rise to accidents, of which the principal ones are manifested by cerebral anæmia, and by lesions which are especially caused by distention and irritation of the nerves. The hypertrophy, in its compensatory *rôle*, must be sustained by heart tonics and sedatives, as was indicated for lesions of the mitral orifice. The cerebral anæmia, which is manifested by vertigo, intellectual debility, lipothymia, pallor of the face, etc., may be more effectually relieved by morphine than by any other drug. Either the hydrobromate, the hydriodate, the hydrochlorate, or Gregory's salt may be chosen, two granules being given every half-hour. Abuse of this drug, however, necessitates larger and larger doses, until morphinomania is added to the disease which primarily called for relief. It should not be forgotten that the medication which has been recommended is only palliative, and that it must be reserved for those cases in which the anæmia has become dangerous or insupportable. A different salt of morphine should be used from time to time, relief should be sought occasionally by resorting to the horizontal position, or, again, five or ten drops of nitrite of amyl may be inhaled from a handkerchief, this variety of procedure being adopted so as to avoid the contracting of the morphine habit. Irritability of the disposition may be relieved by using three granules of one of the alkaloids of opium with three of the bromide of camphor, three times daily. Thoracic neuralgia may also be relieved by morphine revulsives, iodoform, hyoscyamine, or the valerianate of atropine. Two granules of either of these agents may be used three times daily, or one granule every half-hour until the desired effect is obtained. *Angina pectoris* is one of the most dangerous complications of lesions of the aortic orifice. Pathologists do not agree in regard to its pathogenesis. All the indications lead to the belief, however, that it is merely a spasmodic neurosis of the heart, and this hypothesis is confirmed by the excellent results which follow the use of antispasmodics. One granule of hyoscyamine, daturine, or atropine, given every quarter of an hour, combined with three granules of the hydrobromate of morphine, or half a centigramme of the hydrochlorate of morphine and half a milligramme of the sulphate of atropine, dissolved in water and injected subcutaneously at intervals of half an hour, will usually bring relief from this severe condition. Inhalations of nitrite of amyl and the prolonged use of electricity will also give good results. Dyspnœa may also be relieved by the use of three granules of morphine, alone or in combination with the hydrobromate of cicutine or with aspidosamine. The last-mentioned drug may be used alone or with adonidine, which has a diuretic action. Both of them have been recently introduced into the dosimetric arsenal, being prepared in granules which contain one milligramme each. It is believed that they will be found indispensable in the treatment of diseases of the heart. Such are the most important symptomatic indications which are to be filled in the treatment of these diseases, which are as common as they are difficult to completely cure.

ORGANIC DISEASES OF THE HEART.

Lesions of the Mitral Orifice.

	Compensatory hypertrophy	Tonics	Arseniate of strychnine, arseniate of iron.
		Sedatives	Aconitine, digitaline.
	Insufficient hypertrophy	Tonics	Digitaline, caffeine, strychnine, guaranine.
Passive congestions.	Cerebral.	Somnolence	Valerianate or arseniate of caffeine.
		Insomnia	Cicutine, croton chloral, bromide of camphor.
		Delirium	Digitaline, aconitine, hyoscyamine.
	Pulmonary	Oppression	Revulsives, aconitine, strychnine.
		Expectoration	Benzoates, atropine.
		Cough	Narceine, codeine, Gregory's salt.
		Hæmoptysis	Ergotine.
	Hepatic.	Cholestasis	Sedlitz Chanteaud, podophyllin.
		Icterus	Colchicine.
	Renal	Oliguria	Sedlitz Chanteaud, arbutine.
		Albuminuria	Aconitine, digitaline.
Dropsy.	Means for exciting diaphoresis		Nitrate of pilocarpine, milk diet.
	Means for exciting diuresis		Arbutine, adonidine.
	Purgation		Podophyllin, Sedlitz Chanteaud. Colchicine.

Lesions of the Aortic Orifice.

Angina pectoris	Hydrobromate of morphine, atropine, nitrite of amyl, galvanic current.
Cerebral anæmia	Salts of morphine, Gregory's salt.
Neuralgia	Morphine, iodoform, hyoscyamine.
Dyspnœa	Morphine, hydrobromate of cicutine, aspidosamine.

Helminthiasis (*Intestinal Worms*).—There are three species of intestinal worms which are more frequently found than any others—lumbrici, oxyuri, and tæniæ. The oxyuri, which have a length which does not exceed ten millimetres, are habitually found in the rectum of children, and from that organ they sometimes migrate into the vagina. The *pruritus* which is occasioned by their presence causes nervous irritation, and may lead to onanism. Our aim should therefore be to exterminate them. Since this affection is exclusively a local one, it should be treated by local means—that is, by enemata or suppositories. For children who are not utterly unmanageable, an enema, the basis of which is the following formula, may be used:

℞ Glycerinæ,
Aquæ puræ................. āā grammes xl.
Calcii sulphidi in granulis... No. xx.
Sig.: Triturate and use as an enema.

If this means can not be conveniently employed we must use mercurial ointment, applied with the finger upon the surface of the anus and rectum. Irritation of the nervous system, caused by the *pruritus* of the anus or vagina, may be treated, in children one or two years of age, with one granule of the bromide of camphor every two hours.

Lumbrici are usually twenty-five to thirty centimetres in length. They are developed from *ova* in the water which is drunk by children rather than from improper alimentation. It may be assumed as a principle that some children are more susceptible to their development than others—that is, poor nutrition is favorable to their development. The treatment consists in the use of means which will poison the parasites, so that they may be ejected with the fæces. The most active agent for accomplishing this purpose, and the one which is most frequently employed, is santonine. The dosage should be large, for the object is to destroy the parasite in the medium in which it lives. Ten to fifteen granules of santonine should be given in the morning, and again in the evening, and the following morning a dose of Sedlitz Chanteaud should be given. No more doses of santonine should be administered, as it will irritate the intestine and produce a more serious result than would be produced by the worms. In addition to santonine, the effect of which is sometimes uncertain, other alkaloids may be used, which also produce good results, but are not to be considered purely as anthelmintics. Among such agents are picrotoxine, two or three granules of which may be used once daily, and sulphate of strychnine, one or two granules of which may be used once or twice daily, in place of the santonine. Two or three granules of the protiodide of mercury may also be used with advantage twice daily, and, unlike calomel, it will not be likely to produce stomatitis.

Tæniæ require a different mode of treatment from the other parasites. Kousseine and the tannate of pelletierine are obtainable from the dosimetric arsenal for their destruction, but very large doses are required. The necessary dose of tannate of pelletierine is thirty centigrammes, which is the equivalent of three hundred granules. The latter may be taken in solution, and this method will often be the preferable one, on account of the prevailing prejudice in favor of the granules. Half an hour after taking the solution one or two spoonfuls of Sedlitz Chanteaud may be taken, especially if the patient is of a full habit. The paralyzing effect of the pelletierine upon the intestine almost always retards the action of the purgative; it will therefore be advisable to administer two or three granules of the sulphate of strychnine with the pelletierine, which will increase its action as a tænicide and prevent the disadvantages which have been mentioned. Strychnine may also be used with podophyllin as a tænicide; two granules of each may be given hourly, but the treatment should not be continued during more than twenty-four hours. While this plan of treatment is less certain than the previous ones, it will be found serviceable in some cases. Two days before a tænicide is given, one should prescribe a laxative dose of Sedlitz Chanteaud, and for nourishment only liquids should be taken. By this plan the action of the tænicide will not be interfered with by fecal contents of the intestine. Indications for the variant are occasionally present. Colic may be relieved by the use of two granules of tannate of cannabine every half-hour. For vomiting, one granule of the sulphate of atropine should be given every hour. Ptyalism will yield to the use of one granule of hyoscyamine every two hours. For insomnia two granules of croton chloral should be given every half-hour, and for convulsions three of the valerianate of zinc every half-hour.

The dominant will suffice, in most cases, to dispel reflex phenomena, and they will cease entirely with the cause of the irritation. *Sublata causa, tollitur effectus* (if the cause is removed the effect will disappear).

HELMINTHIASIS.	DOMINANT.	Oxyuri . . .	Mercurial ointment, enemata containing sulphide of calcium, water, and glycerine.
		Lumbrici . . .	Strychnine, santonine, Sedlitz Chanteaud, picrotoxine.
		Tæniæ . . .	Tannate of pelletierine, Sedlitz Chanteaud, sulphate of strychnine, podophyllin.
	VARIANT.	Colic. . . .	Tannate of cannabine.
		Vomiting . . .	Sulphate of atropine.
		Ptyalism . . .	Hyoscyamine.
		Insomnia . . .	Croton chloral.
		Convulsions . .	Valerianate of zinc.
		Paralysis . . .	Sulphate of strychnine.

Hemicrania.—Certain diseases are considered incurable simply for the reason that they resist all the means which have heretofore been used to cure them. This conclusion is not a logical one, for the impotence of our efforts does not prove the invulnerability of the disease, but the weakness of our attack. We should therefore distinguish, in therapeutics, those diseases which have merely resisted the means which have been used for their cure, from those which are quite insusceptible of being cured, so as to encourage experimenters in their investigations upon the action of drugs in certain fields which have heretofore been considered beyond the reach of medical aid. Fighting against the impossible is absurd, but all attempts in undiscovered territory are permissible and meritorious.

Unfortunately, the habit of pathological anatomists has been to turn the attention of observers rather toward the irreparable results of disease than toward their first causes and the means for treating them, which has happened to the detriment of physiology and therapeutics. While the study of organic lesions has enriched the museums with the most exquisite histological specimens, the chapter upon pathogenesis has remained stationary, and the literature concerning the treatment of diseases has not been enriched by a single durable formula; for, remarkable as it may seem, the more one occupies himself with the pathological anatomy of a morbid condition, the less he dreams of solving the question as to its treatment. This is not altogether surprising, however, for, after a disease has been pronounced incurable by high authority, it is natural that those who admit such authority should withdraw from therapeutic investigation of the case and devote themselves exclusively to its anatomical aspects, thus transforming human medical science into special zoölogy. For a time, medical progress, like other discoveries, was due to chance. Experimenters took as guides in their investigations certain relations of similarity as to form, color, name, etc. The results were as ridiculous as could have been expected from such a plan. Now, thanks to the light which has been shed upon physiology by the work of learned men, and to the precise means which chemistry has provided in the alkaloids, of which pharmaco-dynamics teaches us the actual effects, therapeutic investigations, placed upon a rational basis, should lead to results as certain as they are useful. Dosimetry, enlightened by physiology, armed with definite chemical principles, and reassured by clinical experience, gives an example of investigation in the direction of therapeutical progress, and the proof that such progress may be realized. It would appear that, with a knowledge that there are perturbing forces which produce disease, and the discovery of the vital action of medicaments, the problem is reduced to its simplest form. Unfortunately, there is not unanimity of opinion in the battalion of physiologists, and a study of the divergences upon physiological questions might be written, like the one which Burggraeve has written with reference to the differences among allopathic practitioners. In the midst of the labyrinth of opinions upon the pathogeny of migraine, we must seek first for the *thread of Ariadne* in order to arrive at the truth. We shall no longer be obliged, then, to retain the word *incurable*, which is written by some pathologists upon the banner which floats above the domains of this disease. Jaccoud, at the end of his article upon migraine, states that art is powerless to abridge the duration of the sufferings of those who are its subjects. Littré and Robin, in their "Dictionary of Medicine," state that, in general, periodic migraine resists the action of medicaments. In spite of the great respect which the author has for the authorities which have been mentioned, he can not help finding the assertion of Jaccoud too positive. The physiology of disease can not be well studied if it is not based upon an exact and complete symptomatology. Now, in this as in all nervous diseases, nothing is so difficult to find as a satisfactory description of symptoms, not of those which characterize the migraine, but of those which constitute it. The mobility and the subjectivity of the greater number of nervous disorders, and the impossibility of laying one's hands upon them, explain the insufficiency of the descriptions of the pathologists as to the manner in which they manifest themselves. It is not by means of one observation, but by repeated ones, that we can feel a certainty as to our knowledge of the different manifestations of different diseases. Thus we can find three distinct periods in the history of the physiology of migraine. In the first, which we can call the idealistic period, migraine is attributed to sympathy between the brain and the stomach. This opinion is defended by William Dale, who thus considers a simple etiological circumstance as a sufficient interpretation of the genesis of the disease. Clifford Allbutt and Niemeyer also think that migraine depends simply upon troubles of the abdominal viscera. This theory does not at all explain the nature of migraine; it only informs us that these troubles may precede or accompany the attack in the head. Other authors refer to other organs as the point of departure for the symptoms in migraine, but without demonstrating its real nature. Tissot, Lebert, and Wepfer say that it is a neuralgia of the supraorbital nerve. Piorry localizes it primarily in the iris; Hasse in the trigeminal; Romberg and Calmeil in the cerebral substance. Anstie passes into the region of hypothetical anatomy when he assures us that this neuralgia is due to atrophic molecular irritation of the roots of the trigeminal. Such is the period of hypothesis. With Du Bois-Reymond another period begins, during which observation which is more subjective in character makes its appearance. This learned physiologist observed in his personal experience certain symptoms which caused him to conclude that migraine is due to an exaltation of the cervical sympathetic. He observed in the course of the attack that the temporal artery became retracted, the countenance pale, the pupil dilated, the globe of the eye retracted, and that, by compressing the spinous processes of the vertebræ corresponding to the cilio-spinal region of the cord, a pain of a more or less acute character was excited. These symptoms were compared with the troubles produced in animals by electrization of the cervical portion of the sympathetic, and were found to be similar, thus leading him to the conclusion which has been stated. In the opinion of Du Bois-Reymond, therefore, migraine is an irritation—that is to say, a spasmodic condition of the organs which are involved. Mollendorf, on the contrary, holds an opinion which is opposed to the foregoing. He found by examining the fundus of the eye that the arteries of the retina, in place of being contracted, were very much dilated; this, added to the fact that the painful side of the head was frequently bathed in sweat, and that compression of the carotid diminished the pain, led him to the conclusion that migraine, instead of being the result of irritation, was, on the contrary, the result of a temporary paralysis of the cervical sympathetic. This conclusion is diametrically opposed to that of Du Bois-Reymond; but, as it is based upon unquestionable observations, it should be accepted. The opposition between these two observers is rather apparent than real, and is perfectly comprehensible if we consider that Du Bois-Reymond's observations upon himself were made with difficulty in the course of an attack. The symptoms which he describes and interprets are referable therefore to the beginning of the disease; while Mollendorf, making his observations upon another individual, did not have the opportunity of being present at the first stage of the disease, and consequently his observations and the conclusions which he draws from them refer to its period of continuance or of decline. Hence, two distinct phases must be conceded to migraine. The opinion which belongs to the third or eclectic period of the history of this disease is that which is held by Jaccoud, Latham, Eulenburg, Gutmann, Poincaré, etc. The theory of Leveing, which attributes the condition to a plethora of the nervous system, explains nothing and makes nothing clear. Hervez de Chégoin, by introducing the vascular element into his explanation of certain symptoms peculiar to this disease, has taken a step in the right direction; but he has not taken into consideration the facts observed by Du Bois-Reymond. Poincaré, of all authors, is the one whose explanation seems the most rational, and the most acceptable to the author of this book, and he accordingly adopts the following statement as to the genesis of migraine: The nervous fluid being disturbed in its regular distribution, owing to different circumstances, the cervical sympathetic is irritated as a result, and tetanization of the contractile elements which depend upon it follows. The most common causes of this disturbance are excesses at table, inanition, over-use of the eyes, very penetrating odors, vigils, prolonged intellectual labor, and changes in certain normal functions. This tetanization may be compared with the period of chill in fevers. The irritation extending to the smooth muscular fibers of the vessels, causes their retraction, and, in consequence, ischæmia of the organs to which they are supplied. The sensorial and intellectual troubles at this period of the disease have no other cause. The semi-amaurosis, the difficulty in perceiving sounds, the intellectual feebleness, find in the weak condition of the blood, followed by the weak condition of the nerves, a plausible explanation. The pain which accompanies these symptoms is attributed to compression upon sensitive nerves by contraction of the walls of the vessels, and is analogous to the condition which obtains in uterine colic. In this first period the cause of the pain, therefore, is a spasmodic irritation which has its seat within the vascular walls. The duration of this first period varies greatly, but it is usually short. To the irritation the opposite condition follows, as is the rule in all nervous manifestations. To exaltation succeeds paralysis; to tetanization, relaxation; to ischæmia, congestion. By admitting the existence of vaso-dilator nerves, we are enabled to say that excessive irritability gives rise to paralysis of the vaso-constrictors, and in consequence to the preponderance of the vaso-dilators, which act when they are not in condition of equilibrium with their antagonists. The phenomena peculiar to the second period are analogous to those of febrile reaction. It is at this time that dilatation of the retinal vessels may be observed, heat and redness of the countenance, the ears, and the conjunctivæ; also the excretion of sweat, tears, saliva, of a large quantity of clear urine, and a large quantity of bile which, by entering the stomach, excites nausea and vomiting. Congestion of the retina and labyrinth produces subjective sensations of light and auditive hyperæsthesia. The hyperæmic brain becomes fatigued by the slightest intellectual effort. The pain in the head persists, but assumes another character and another origin. It is no longer the constrictive pain, such as was felt at the beginning of the attack, but a pain of an expansive character, which is suggestive of the throbbing of an artery, and should be attributed to the distention of the perivascular tissue of the branches of the fifth pair. The longer duration of this stage, as compared with the first, suggests that in each attack there are paroxysms during which the phase of irritation gradually becomes less prominent, on account of the progressive obtunding of nervous irritability; while, for the same reason, the second period develops increased sensitiveness to each successive exacerbation. This physiological analysis indicates clearly the treatment for each period. Some considerations may serve the better to establish our therapeutic plan, and confirm what is about to be said concerning the genesis of migraine. Every irritation of a part which is remote from that which is likely to be the seat of the disease is capable of aborting the attack by nervous transposition and derivation of the blood. This fact is observed in the result of the ingestion of alcohol, wine, or coffee, as well as in the application of cutaneous revulsives. Coitus will sometimes relieve migraine at the outset. All these means are antispasmodic, and accord with the results obtained by Piorry, who rubbed the eyelids with a concentrated solution of the extract of belladonna. If the patient is seen during this period, we should therefore advise the use of hyoscyamine, bromide of camphor, valerianate of caffeine, benzoate of ammonia, etc., in frequent doses, for this period is usually of short duration. In the second period or period of paralysis, as in that of febrile reaction, we should give strychnine to incite vital force, aconitine to relieve hyperæmia, salts of quinine for their antiperiodic effect, and occasionally digitaline, if the pain is manifestly increased by arterial pulsations. These medicaments being designed to overcome the primary elements of the disease, other remedies, which are secondary, may be neglected. As the attacks succeed each other with a certain regularity, we should not forget the preventive treatment, so as to guard against their recurrence. The diagnosis from an etiological standpoint is of great importance at this juncture, in enabling one to oppose to the determining and predisposing causes the means which will eliminate them. If hemicrania is idiopathic, the use of hyoscyamine and valerianate of caffeine will overcome the susceptibility of the sympathetic. Hydrotherapy and exercise are also very useful auxiliaries. One of the remedies which is often used, though its mode of action can not be explained, is guaranine, which gives excellent results in doses of two granules every half-hour, not only during the paroxysm, but also in the intervals. As a preventive to additional attacks, four granules may be used three or four times daily. This treatment should be continued for a long time, not being suspended abruptly, but by gradually diminishing doses. Under the influence of guaranine, which certainly acts in a complex manner, the attacks become less frequent and less severe, and the disease becomes quite endurable. These results show that Jaccoud has been unwise in condemning patients to await with all possible patience the natural termination of their sufferings, the means of relief being within their grasp. In the the author's experience, one lady who had been a great sufferer from migraine was freed from suffering for forty days by the aid of sea-baths and two granules of hyoscyamine daily. Another lady who has short but very frequent attacks, which sometimes recurred in the same day, was entirely relieved after having taken for eight days five granules of aconitine with five of arseniate of quinine daily. Hyoscyamine was tried in this case during the congestive period of an attack, but it only aggravated the pain. G. F. Brizuela reports, in No. 20 of the "Revista de Medicina Dosimétrica," published in Madrid, the case of one of his neighbors who had suffered, from the age of twenty years, with intermittent attacks of migraine, without definite periods for their recurrence, the attacks never lasting less than thirty hours. By taking one granule of aconitine and one of caffeine every quarter of an hour, he was able to limit the duration of the attacks to two hours, at the end of which time he could eat without rejecting his food, as had always been his previous custom. Patients with this disease should know that progress has been made in therapeutics, and that they are indebted to the illustrious author of dosimetry for this progress. What is true in respect to this disease is also true of others, which increases the obligation to him both for the present and the future. Physicians of whatever school should never forget the wise observation of Arago, "The man who uses the word *impossible*, in any department outside of the mathematical sciences, is deficient in wisdom."

HEMICRANIA, OR MIGRAINE.	DOMINANT.	Want of dynamic equilibrium	Guaranine.
	VARIANT.	Spasm	Hyoscyamine, bromide of camphor, benzoate of ammonia, valerianate of caffeine.
		Paralysis	Arseniate of strychnine.
		Congestion	Aconitine.
		Periodicity	Valerianate of quinine.
		Cardiac excitement	Digitaline.

Hepatitis, Interstitial (*Cirrhosis of the Liver*).—Sclerosis is preceded by a process of congestion which is necessary to the proliferation of the connective tissue. After the condition of hypertrophy has been reached, we can do nothing to effect a transformation in a retrograde direction. There are non-definite lesions, pathological cicatrices, which it is beyond our power to remove. The opportunity for intervention by therapeutic means does not exist, therefore, when the disease is already established; but, on the other hand, it does exist during the preparatory pathogenic period, when the condition of health is being transformed into that of disease, and when new portions of the organ are still undergoing attack. It is the successive aggravations of this condition which finally bring about the fatal issue. The course is clearly indicated—namely, to oppose the hyperæmias and avoid their repetition. The dominant treatment for interstitial hepatitis may, consequently, be confused with that for congestion of the liver, which has been considered in another chapter. Aconitine should form the basis of the anti-congestive treatment, and it at once satisfies two important indications. The first refers to the hyperæmia, which it may dispose of before there is new proliferation of connective tissue. The second refers to its action as a cholagogue, and thereby as an incitant to the secretion of bile. On the one hand, it diminishes vitality in the connective tissue; on the other, it increases it in the parenchymatous tissue. It thus establishes an equilibrium, which resembles, as closely as may be, the physiological equilibrium. The hyperæmia is to be attacked by administering aconitine in one-granule doses every hour, or every half-hour in cases in which there is an excited state of the circulation in general, or pain and great increase in the volume of the liver in consequence of the increased flow of blood to the organ. In cases in which the hyperæmia is not very pronounced, and the symptoms do not indicate extensive trouble in the circulation, there is still no reason for neglecting the condition, for, though the hyperæmia be not extensive, it is an insidious condition, and is subject to frequent repetitions. In such cases aconitine should be given in moderation, but for a long time, perhaps, in two-granule doses two or three times daily. If the administration of the aconitine can not be continued for a long time, it may be alternated with colchicine in similar doses, the effect of the latter being more decidedly cholagogue and less anti-congestive. Strychnine should be used constantly, in order to fix the sedative effect which is produced by the aconitine, and also to prevent renewed hyperæmia, which may be produced as a result of extreme vaso-motor atony. The attention of the physician should be fixed almost exclusively upon this portion of the pathological field, because it is the only one upon which the victory can be disputed. The professors of the official school, realizing the weakness of their instrumentalities in treating organic lesions, proceed, like ourselves, to the treatment of the dynamic perturbations which precede them. Dujardin-Beaumetz says, concerning this subject: "In the interstitial inflammations which result in sclerosis, we can only reach the element of congestion which precedes the organization of connective tissue. That which is true of the liver, in this respect, is true also of interstitial nephritis and of sclero-myelitis, in which the inflammatory process is the same. After proliferation of the connective-tissue cells has been established, it is impossible to destroy the tissue by therapeutic means, and restore hepatic cells (to the liver), Malpighian bodies (to the kidneys), or nerve structure (to the spinal cord)." The proliferation of the connective-tissue elements causes displacement of the other anatomical elements which enter into the organization of the liver. The vascular supply becomes insufficient, the blood-current becomes obstructed, passive congestion is established in all the ramifications of the *vena portæ*, and this congestion, by preventing intestinal absorption, and interfering with peristaltic action, results in ascites and diarrhœa, which attend cirrhosis of the liver sooner or later. In order to relieve the stasis, we should seek to strengthen the heart by the use of two granules of strychnine four times daily; and, to relieve the pressure upon the nervous system, either diuretics and purgatives may be used in moderation, or a smaller quantity of fluids may be ingested, thus offering less to the intestine for absorption. Sedlitz Chanteaud dissolved in a little water will be found very serviceable at such a time. For constipation, three to four granules of podophyllin may be given every evening, and a spoonful of Sedlitz Chanteaud every morning. Diarrhœa, if not profuse, may be serviceable, and calls only for the use of strychnine to establish the advantage which the patient may have derived from it; but, if it is excessive, it will make cachexia more pronounced, and profoundly debilitate the patient. It may be moderated by the use of three granules of morphine every two hours, and three of pepsin with each meal. The condition of acholia results from disturbances in the secretion and excretion of the biliary fluid. Iridine is also always successful in re-establishing the flow of the bile, and three to five granules may be given three or four times daily. Ascites calls for the same treatment as stasis of the *vena portæ*, from which it proceeds. We can only attempt to stop its rapid development by means of strychnine. When, in spite of all treatment, abdominal dropsy threatens the life of a patient, by reason of the dyspnœa which is occasioned by it, we must practice paracentesis, being careful to avoid the dilated veins upon the abdominal wall which compensate the embarrassed portal circulation. The patient should be advised to lie upon the side opposite that of the puncture; the wound may be cicatrized rapidly without giving way to fistulæ and inflammations of the skin. Paracentesis should be preceded and followed by the administration of two granules of ergotine and two of the sulphate of strychnine every two hours to prevent the renewed transudation of the dropsical fluid. Apart from those cases in which asphyxia threatens, parencentesis may be tried as a curative means, by reason of the favorable modifications which it induces upon the circulation and the respiration. To warrant the operation, however, there should be some probability that the liquid will not be rapidly renewed, for the patient would bear with difficulty the loss from the blood of the serum, which would result from the redevelopment of the ascites. The age of the patient, the condition of his strength, the development of the collateral circulation, the degree of atrophy, these are the conditions which must be consulted in deciding as to the propriety of surgical intervention. Dyspepsia calls for quassine to stimulate contractility, and pepsin to replace the gastric juice, which has been changed in quality with the congested condition of its mucous membrane. Sedlitz Chanteaud may be used daily to relieve the digestive canal of any imperfectly elaborated food which it may contain. Cirrhosis, whether due to stasis of the portal circulation, which will facilitate enterorrhagia, or to that particular dyscrasia which is accompanied by hæmorrhages at particular parts of the body, should be treated, in case hæmorrhage does occur, with three granules of ergotine every quarter of an hour. If hepatitis is due to the action of malarial influence, hæmorrhage may be more easily arrested by giving twenty granules of the sulphate of quinine three times daily. In enterorrhagia we should associate digitaline with the ergotine, giving one granule every hour.

If the hæmorrhage proceeds from a dyscrasia, two granules of the salicylate of iron may be given every half-hour.

INTERSTITIAL HEPATITIS.	DOMINANT.	Hyperæmia		Aconitine.
	VARIANT.	Stasis of the portal circulation		Strychnine, digitaline. Sedlitz Chanteaud.
		Constipation		Podophyllin. Sedlitz Chanteaud.
		Diarrhœa		Strychnine, morphine.
		Acholia		Iridine, euonymine.
		Dyspepsia		Pepsin, Sedlitz Chanteaud, quassine.
		Dyspnœa		Paracentesis.
		Hæmorrhage	from stasis	Ergotine, digitaline.
			from dyscrasia	Ergotine, salicylate of iron, sulphate of quinine.

Hepatitis, Suppurative.—Abscess of the liver may be caused by direct irritation, as by a biliary calculus, or by the irritation of septic agents brought from distant organs, as in cancer of the stomach, ulcerative colitis, etc. The discovery of the pyogenic microbes (streptococcus and staphylococcus) seems to be about to replace the old metastatic theories with more rational ideas, which will more satisfactorily explain the facts which have been observed. The dominant in hepatitis varies with the phase of the disease. In the dynamic period, when vaso-motor paralysis opens the morbid scene, we should give a granule of strychnine every half-hour to overcome the paralysis, and Sedlitz Chanteaud to cause elimination of the irritating agents. The second indication will be filled by the use of five granules of calomel every hour, or two of colchicine every two hours, until a cholagogue effect is obtained. When paralysis results in hyperæmia, which is quickly transformed into inflammation, one granule of aconitine and one of strychnine should be used every half-hour until there is a remission of the symptoms. The chills which come at the beginning of the disease should be treated with the arseniate of strychnine until a reaction is apparent. The fever, which is almost always severe, proceeds by intermittent or remittent attacks, with evening exacerbations. For the first we should give twenty granules of the salicylate of quinine at night, and for the remittent fever one granule of aconitine every hour during the attack, and the granules of the arseniate of quinine every hour during the remission.

The *point de coté*, or pain in the liver, sometimes radiates as far as the shoulder, embarrasses the respiration, interferes with the patient's movements, and, by the increased flow of blood which it excites, increases the inflammatory condition. It should therefore be carefully antagonized with two granules of the hydrochlorate of morphine every quarter of an hour. The dry cough which accompanies this condition, and is called the hepatic cough, may be soothed by the use of two granules of the hydrobromate of morphine every quarter of an hour. The vomiting, which is usually present in the first days of the disease, is the result of reflex irritation, and may be checked by the use of two granules of codeine, or two of the tannate of cannabine, every half-hour; it may also be due to direct irritation from the presence of the bile. In the latter case Sedlitz Chanteaud would be preferable to the sedatives. Icterus is only of secondary importance. In chronic hepatitis interference on account of this symptom is sometimes required, on account of its duration and the anxiety which it causes the patient. Two granules of calomel and two of arseniate of soda, given five times daily, will cause a rapid disappearance of this symptom. When there is no longer any doubt as to the presence of pus, surgical intervention will be necessary, whether the cavity be freely opened, with strict antiseptic precautions, or a spontaneous discharge of the pus be facilitated by the application of Vienna paste to the surface of the abdomen over the liver. The opening should be treated with antiseptic irrigations, drainage-tubes being retained in the wound. Whether the abscess open spontaneously or be opened by surgical means, internal treatment should precede and accompany the evacuation of the purulent accumulation. One granule each of iodoform and arseniate of soda every two hours to check suppuration, and two of arseniate of strychnine every three hours to overcome adynamia and prostration, should be given regularly and persistently. The colliquative diarrhœa and hectic fever which accompany chronic hepatitis leave little hope for a favorable issue of the disease. In some cases the combination of sulphate of strychnine and cotoine in two-granule doses every two hours, together with the principal treatment, will assist in bringing about a recovery. During the entire course of the disease a milk diet must be used almost exclusively, or at any rate there should be abstinence from the use of stimulating substances. The relation which exists between gastro-duodenal irritation and inflammatory conditions of the liver is well known.

SUPPURATIVE HEPATITIS.	DOMINANT.	Vaso-motor paralysis .	Arseniate of strychnine.
		Elimination of septic matter	Calomel, Sedlitz Chanteaud.
		Hyperæmia, inflammation	Aconitine, strychnine.
	VARIANT.	Chills	Arseniate of strychnine.
		Intermittent fever . .	Salicylate of quinine.
		Remittent fever . .	Aconitine, arseniate of quinine.
		Pain in the liver . .	Hydrochlorate of morphine.
		Hepatic cough . . .	Hydrobromate of morphine.
		Vomiting . . .	Sedlitz Chanteaud, codeine.
		Icterus	Calomel, arseniate of soda.
		Suppuration . . .	Iodoform, arseniate of soda.
		Adynamia . . .	Arseniate of strychnine.
		Diarrhœa . . .	Sulphate of strychnine, cotoine.

Hydrocephalus (*Serous Apoplexy*).—Dropsy of the brain may be either congenital or acquired. From the clinical point of view, the disease may be considered as chronic and acute, the congenital form being the chronic one. Acquired or acute hydrocephalus alone calls for particular investigation. The principal causes of encephalic dropsy are either mechanical or dyscrasic. The first consist in obstacles to the venous circulation of the brain, and may be either within or without the brain; the second include all the changes and all the diseases which modify the composition of the blood, and cause serous transudation. A third group of causes—the dynamic—should also be admitted, which consist in an atony or relaxation of the capillaries; and this group is really the most important, for it may include the other two. Neither transudation from dyscrasic origin nor dropsy from venous stasis would be produced if the vascular tone were always sufficient to resist intravascular pressure. The principal *dominant* should therefore always attack this fundamental lesion, and ergotine and strychnine will perfectly satisfy the indication. Two granules of each may be given every half-hour in acute cases; three to five of each daily in chronic ones. For children, brucine is preferable to strychnine, because, as it is less active, its action may be better graduated. The variant should change with the variety of the hydrocephalus. Three varieties may be considered—the apoplectic, the rapid, and the slow. In the apoplectic form, the effusion may occur suddenly, or it may be added to a pre-existing effusion, so as to produce within a short time great compression upon the nervous centers contained in the brain. The symptoms include annihilation of the functions of the nervous system, which is described under the name of the apoplectic condition. The diagnosis between serous apoplexy and other apoplectic conditions almost always presents great difficulties. Ergotine is appropriate for serous as well as for sanguinolent effusions, and should be used in all cases; but its regular and rapid action can only be depended upon by using it hypodermically. If the differential diagnosis can be made, it will be proper to administer a two-per-cent solution of muriate of pilocarpine hypodermically, which will cause the removal of the serum rapidly and in large quantity. This result having been obtained, the ergotine and strychnine treatment must be continued, in order to secure the advantage obtained. In the *rapid* form of hydrocephalus, there is more time for therapeutic intervention. The treatment is the same, but the alternating conditions of excitation and depression also indicate quinine. In the period of excitation, three granules of the hydrobromate may be given every half-hour, and in the period of depression, the valerianate in similar doses. Vertigo often accompanies the slow form of hydrocephalus. It should be treated with caffeine, in three-granule doses every hour. Aside from the action of caffeine upon the cerebral functions and its dynamophoric properties, it also acts as a diuretic. The general paralysis and obtuse sensations, which are the result of compression of the brain, may be modified by the use of brucine in three-granule doses every two hours. Convulsions, which may interrupt the monotony of the slow form of the disease, should be treated with bromide of camphor in two-granule doses every half-hour, combined with brucine and sulphate of strychnine, one granule of each every hour. Treatment which is designed merely to remove the serum should not be practiced, because it only tends to increase the vascular atony. If, however, it is the only thing which can be done, we should first strengthen the patient with neurosthenic means, and then use purgatives, diuretics, sudorifics, etc.

HYDROCEPHALUS.	DOMINANT.	Vascular atony . .	Ergotine, sulphate of strychnine.
	VARIANT.	Serous apoplexy . .	Pilocarpine.
		Excited condition . .	Hydrobromate of quinine.
		Alternating with depression	Valerianate of quinine.
		Vertigo	Caffeine.
		General paresis . .	Brucine.
		Convulsions . . .	Bromide of camphor, sulphate of strychnine.

Hydrophobia.—Thanks to the labors of Pasteur, we now know that hydrophobia is due to the development of a microbe within the nervous system, which microbe he has discovered and cultivated. The preventive treatment, consisting in inoculation, thus becomes a very simple matter, and justifies the hope that hydrophobia in man may in the future be of exceptional occurrence.

Unfortunately, elements are still wanting which appertain to the preservative value of attenuated virus which has been the means of inoculation after a bite has been received, and still more so in those cases in which hydrophobia actually exists. The preventive dosimetric treatment should have for its object opposition to the development of the virus and diminution of the nervous impressionability of the patient, so as to put off or at least to diminish the violence of the attacks when the disease exists. After the bite itself has been suitably treated, we should endeavor to destroy the microbes, which may not have been reached by the local treatment, by saturating the organism with sulphide of calcium, which is the best parasiticide with which we are acquainted. The drug should be given with great regularity, and with as much persistence as if an eruptive fever were being treated, one or two granules being given every quarter of an hour, and the patient being kept under its influence two to four days, according to the probabilities with reference to the inoculation, the number, situation, and gravity of the bites being considered. We should also give alternately, in two-granule doses twice daily, atropine and cicutine as long as is necessary to insure complete tranquillity.

After the disease has manifested itself, the dominant will be five granules of the sulphide of calcium every half-hour, to neutralize the virus which is disseminated through the nervous system ; atropine being added in one-granule doses every half-hour until its physiological effect is obtained, and then being renewed after this effect has passed away. As the virus changes the character of the secretions by its own nutrition and the modifications in nutrition which it brings about in the organism, its elimination by all the emunctories should be favored. For this end diuretics and purgatives should be given, and the indication will be fulfilled by using a spoonful of Sedlitz Chanteaud every two hours. During the period of melancholy, when the nature of the disease is suspected by the patient, the dominant should be used with great activity, for it is only during this stage that it can be used with regularity. The depressing character of the morbid phenomena of this period calls for the use of the salicylate of ammonia in three-granule doses every hour, and this in addition to its exciting action will also aid the action of the dominant. In the second period, the readiness with which spasms are excited being one of the most frequent causes of the patient's sufferings, we should, if possible, re-enforce the action of atropine with daturine, or with bromide of camphor if a further use of the mydriatics is not advisable. Atropine may be given in one-granule doses every half-hour until the physiological effect is obtained; camphor or croton chloral may be used in three-granule doses every half-hour until a sedative effect has been obtained. The paralytic period which follows the great loss of vital force indicates hypophosphite of strychnine and phosphoric acid in doses containing two granules of each every half-hour. When pharyngeal or other spasms of the respiratory passages interfere with the ingestion of medicaments, we must use hypodermic and rectal injections. This plan of treatment may seem too energetic, but unfortunately the author has seen in three fatal cases that death is the rule of this disease, which is so rapid that it must be attacked unsparingly and without hesitation. Whatever plan of treatment be devised, experience has proved that the best chances for success exist no more after the melancholic period has passed.

HYDROPHOBIA.	DOMINANT.	Parasitic element .	Sulphide of calcium.
		Excitability .	Atropine.
		Retention of the products of elimination .	Sedlitz Chanteaud.
	VARIANT.	Period of melancholy .	Salicylate of ammonia.
		Period of spasm .	Daturine, bromide of camphor.
		Period of paralysis .	Hypophosphite of strychnine, phosphoric acid.

Hyperæmia, Meningo-spinal.—Meningo-spinal congestion sometimes occurs as an independent and isolated condition ; it is usually united to other lesions, however, especially to spinal meningitis. The dominant consists in the use of aconitine, which, in addition to its effect upon the hyperæmia, is an excellent sedative to the nervous centers, either directly by its sedative action upon the nerves, or indirectly as a moderator of the circulation. The congestion may be active, supplementary, or passive. Active congestion is produced by the irritant action of infectious agents, as occurs, for example, in variola. The sulphide of calcium should be combined with aconitine, to antagonize simultaneously the physio-pathological and the etiocratic elements. When the congestion is due to the action of cold, diaphoretics are indicated, and one granule of aconitine with five of pilocarpine may be given every quarter of an hour until the desired effect is produced. If the congestion is due to the action of heat, the same diaphoretics may be used, and Sedlitz Chanteaud may be added for its refreshing influence upon the blood. The supplementary congestions which may be due to suppression of the menses will yield to the action of veratrine, which at the same time will tend to re-establish the suppressed function. Two granules of veratrine should be given with one of aconitine, every half-hour, or every hour, according to the urgency of the case. If the congestion is due to the suppression of a hæmorrhoidal flux, the daily use of Sedlitz Chanteaud should be resorted to, together with three granules of bryonine every two hours. The passive congestions which are due to obstruction in the venous circulation may be treated in different ways. The end which should always be sought is the restoration of the circulation to its normal condition, and the stimulation of the vessels of the cord, which have been dilated and paralyzed by the excessive pressure of the volume of blood which they contain. To accomplish this end, two granules of digitaline and two of the sulphate of strychnine should be given two to four times daily. Intense pain in the lumbar region should be treated with one granule of hyoscyamine and one of cicutine every half-hour until relief is obtained. Retention of urine resulting from torpor in the innervation of the excretory apparatus calls for the use of hypophosphite of strychnine, three granules of which may be given every hour; in some cases it will be well to add a granule of daturine every hour until mydriasis results. For the paraplegia, two granules of phosphoric acid, three to five times daily, will be appropriate; or, in recent cases, three granules of ergotine every two hours. Cold, warm, or hot baths will be found useful as auxiliaries to this plan of treatment.

MENINGO-SPINAL HYPERÆMIA.

DOMINANT.

Hyperæmia	Aconitine.

CAUSAL VARIANT.

Active congestion . .	From infection . .	Sulphide of calcium.
	From cold . . .	Nitrate of pilocarpine.
	From heat . . .	Aconitine, Sedlitz Chanteaud.
Supplementary congestion .	From cessation of the menses . . .	Veratrine.
	From cessation of the hæmorrhoidal flux .	Sedlitz Chanteaud, bryonine.
Passive congestion . .	From obstruction in the venous circulation .	Digitaline, sulphate of strychnine.
	From muscular efforts .	Ergotine.

SYMPTOMATIC VARIANT.

Radiating lumbar pains	Hyoscyamine, cicutine.
Retention of urine	Daturine, hypophosphite of strychnine.
Paraplegia	Ergotine, phosphoric acid.

Hyperkinesia, Cardiac (*Palpitations of the Heart*).—Exaggeration in the number or the force of the cardiac pulsations constitutes hyperkinesia. But, in order that this may amount to a condition of disease, the patient must be conscious of his trouble, and really suffer from it. The condition appears to be a convulsive one of the cardiac muscle, which affects, to a greater or less degree, the entire organism. Whatever the cause of the palpitations may be, the essential lesion is a dynamic perturbation, for the effect is not a constant convulsive condition of the heart; neither is the patient conscious of his trouble at all times. To relieve the irritability of the heart, or the nervous centers which animate, should be the object of treatment, and consequently the dominant established upon this hypothesis should be associated with the treatment for the other lesions. One granule of strychnine, with one of hyoscyamine, three or four times daily, by restoring the dynamic equilibrium, will usually constitute the principal treatment, and for many cases it is all that will be necessary. There are particular indications for the mechanical modifications caused, in some cases, by a diminution, and in others by an increase of pressure. In the first case we should give two or three granules of the arseniate of iron three times daily to increase the volume of the circulating fluid, and two or three granules of the arseniate of strychnine three times daily to increase the vascular tone and restore the normal pressure. In cases of the opposite character, two granules of digitaline and two of sulphate of strychnine should be given two or three times daily, to bring about an equilibrium between the force of impulsion and the vascular pressure. The changes in the innervation consist of vaso-motor atony, which calls for two or three granules of ergotine and an equal quantity of the arseniate of strychnine three times daily, and nervous irritability, which may be quieted by the use of three granules of the monobromate of camphor three or four times daily, or by similar quantities of codeine. Modifications in the quantity and quality of the blood have a noteworthy influence in the production of hyperkinesia. Chlorosis, anæmia, and plethora are frequently the cause of palpitations. Chlorosis and anæmia should be treated with two granules of the valerianate of iron and two of arsenious acid three times daily, while plethora, as a cause of hyperkinesia, will yield to the influence of Sedlitz Chanteaud and two granules each of aconitine and veratrine three times daily. The hygienic treatment will consist in protecting the heart from anything which may tend to irritate it. Tea, coffee, alcohol, coitus, moral emotions, and tobacco are all agents which tend to the production of palpitations, and should be carefully abstained from under any and all circumstances. The symptomatic variants will rarely require our attention in the treatment of this condition; it will be occupied, in the main, with the causal indications. Sometimes, however, particular symptoms will furnish the occasion for particular treatment. Thus, should dyspnœa be a source of annoyance to the patient, we may give two granules of the hydrobromate of cicutine every half-hour until relief is obtained. Lipothymia will demand the immediate use of one granule of phosphoric acid every five minutes. The periodic occurrence of the attacks which is sometimes noticeable will indicate the use of three to five granules of the hydrobromate or the valerianate of quinine three times daily. Other indications will sometimes arise, and they must not be neglected. For example, helminthiasis may cause palpitations, which will be more or less troublesome, and for this condition ten granules of santonine should be given every evening. Constipation may also be a complication, and this should be treated with three to five granules of podophyllin every evening, or by the daily use of Sedlitz Chanteaud. There are also reflex palpitations, which are always due to nervous irritability, besides many other varieties which are too well known to require particular mention. It may be desirable, however, to call attention to those which are caused by gastric disorders, especially such as arise from dilatation or flatulence.

HYPERKINESIA.

DOMINANT.	Dynamic modifications	Want of dynamic equilibrium	Hyoscyamine, strychnine.
	Mechanical modifications	Diminished pressure	Arseniate of iron, arseniate of strychnine.
		Increased pressure	Digitaline, sulphate of strychnine.
	Modifications of innervation	Vaso-motor atony	Ergotine, sulphate of strychnine.
		Nervous irritability	Bromide of camphor, codeine.
	Modifications in the blood	Anæmia	Valerianate of iron, arsenious acid.
		Plethora	Aconitine, veratrine, Sedlitz Chanteaud.
VARIANT.	Dyspnœa		Hydrobromate of cicutine.
	Lipothymia		Phosphoric acid.
	Periodicity		Valerianate of quinine.
	Helminthiasis		Santonine.
	Constipation		Podophyllin, Sedlitz Chanteaud.

Hypertrophy, Cardiac.—Hypertrophy of the heart is the result of an irritation of its muscular tissue, of a nutritive character, resulting from an excess of work, which may be caused by an interference in the circulation of the blood propelled by the ventricles, or by an excitation which is purely of nervous origin. Hypertrophy, in so far as it is a compensating lesion, is a salutary modification of the normal structure, an effort to restore the physiological equilibrium by adapting the organ to its function, and to that extent it should be appreciated. Sometimes, however, it exceeds the necessities of the case, and this excess becomes a disease which we must moderate, not only because it imposes a useless restraint upon the patient, but because we ought to reserve the proliferative force of the organism for that epoch—which may not be remote—when we shall need its assistance. Hypertrophy which follows hyperkinesia should always be antagonized, because it is a useless change, an aggravation of its original cause, and far from being a compensatory condition, as it is when valvular lesions are present. Hypertrophy of the contractile elements of the heart may be modified by veratrine, an agent which has the greatest influence upon muscular nutrition. It may be given in large doses, which should be regulated, however, by the state of the pulse and the cardiac force. In general terms, two to three granules may be given three to five times daily, until the state of the pulse indicates its withdrawal. Excess of vascular pressure, caused by congestion within the cranium or elsewhere, should be treated with aconitine and Sedlitz Chanteaud. Two granules of aconitine three to four times daily will be equivalent to a bloodletting, and Sedlitz, by the transudation which it provokes to the surface of the intestinal mucous membrane, will diminish the vascular pressure and regulate all the functions. A dessertspoonful may be given every morning. Epistaxis may be of service in relieving cephalic hyperæmia; but, if this natural means of abstracting blood is not indicated, we should use ergotine in doses of three granules every half-hour. Vertigo should be treated with purgatives and the valerianate of caffeine. The use of Sedlitz Chanteaud should also be insisted upon, and its effect may be increased by using three to five granules of podophyllin every evening. Caffeine should also be used with moderation—that is, in doses of two granules every quarter of an hour. Aconitine is equally useful for vertigo, especially when this is accompanied by headache, one granule being given every half-hour. A hard and vibrating pulse, denoting an excitation of cardiac contractility, and a considerable increase in arterial pressure, calls for Sedlitz Chanteaud and emetine, two granules of the latter being given every hour until the circulation is quieted. Palpitations may be controlled by using two granules each of digitaline and arseniate of antimony, two to three times daily. Dyspnœa and thoracic oppression, indicating broncho-pulmonary congestion and weakness of the respiratory apparatus, should be treated with three granules each of apomorphine and nitrate of pilocarpine every two hours. After the functional troubles have been quieted, we should seek to preserve the physiological equilibrium and prevent fatigue of the heart by giving two to four granules of aconitine every evening, with an equal quantity of digitaline and arseniate of strychnine, and in the morning a small dose of Sedlitz Chanteaud. By these means we can keep the patient in a relatively comfortable condition for a very long time. The hygienic treatment should, of course, harmonize with the pharmaceutical.

CARDIAC HYPERTROPHY.	DOMINANT.	Muscular hypertrophy	Veratrine.
	VARIANT.	Excess of vascular pressure Cephalic congestion	Sedlitz Chanteaud, aconitine.
		Epistaxis	Ergotine.
		Vertigo	Podophyllin, aconitine, valerianate of caffeine.
		Hard and vibrating pulse	Sedlitz Chanteaud, emetine.
		Palpitations	Digitaline, arseniate of antimony.
		Dyspnœa	Apomorphine, nitrate of pilocarpine.

Hysteria.—Hysteria is a type of affections which are purely of nervous origin, and is caused by a particular predisposition to a want of dynamic equilibrium. An attack may be caused by a perturbation of any character whatsoever, and it may take a thousand forms, from a simple change of mood to the most violent convulsions, ecstasy, etc. The general treatment of hysteria should consist, therefore:

1. In restoring the equilibrium of the vital dynamic condition.

2. In suppressing the exciting causes.

The first indication may be filled by the observation of a rigorous physical and moral regimen, and by the use of the proper alkaloids. Aconitine, digitaline, hyoscyamine, and strychnine should be given every evening in doses of two to four granules of each, the treatment being commenced, however, by using the smallest quantities of each, and gradually increasing it until the quantity indicated has been reached. This treatment should be continued a long time, and the dosage may be diminished as the symptoms are ameliorated. Should congestion occur frequently, we should press the administration of aconitine; should the heart be very excitable, we should adopt the same course with digitaline; if the patient should be very feeble, we should increase the quantity of strychnine; if spasms are frequent and constitute the principal trouble, we should give without hesitation a very strong dose of hyoscyamine, provided there is no peculiarity on the part of the patient to contra-indicate its use. The second indication, to suppress the exciting causes, is equally important. Everything should be avoided, therefore, which would excite an attack—not only an attack of a pronounced character, but also one which, from its slight intensity, might be overlooked. Frequently hysteria is caused by constipation, ulceration of the neck of the womb, laborious digestion, stimulating or innutritious food, or entozoa. The treatment should be followed up without interruption or abatement of care. It must not be forgotten that one attack predisposes to others, and that the longer the interval between consecutive attacks, the better will be the prospect of a radical cure. With advancing age, hysteria will disappear; the same result may also be obtained by proper treatment: in both cases a certain period of time is an indispensable element of success. During the attacks, there is little that the physician can do. After having arranged the patient so that she can not harm herself and can properly perform the different physiological functions, he may interfere in the manner which is prescribed in the various classical treatises; but he will rarely be able to shorten the duration of the attack. He may reach the conclusion that an aborted attack never leaves a patient in good humor; and, on the other hand, by a kind of disastrous compensation, exposes her to a series of violent attacks. It would seem as if the system needed to get rid of a superfluity of force, which results in an absence of dynamic equilibrium, before that equilibrium can be restored. There are cases, however, in which intervention is required, more for the sake of the patient's family than on account of the exigencies of the disease. In such cases we should give two granules of bromide of camphor every half-hour, dissolved in a teaspoonful of cold water or similar quantities of piperine. Some symptoms require particular treatment by means of local applications, such as metallotherapy, electricity, hydrotherapy, etc. By treatment with alkaloids, we can often obtain results, however, which could not be obtained by external treatment. We shall therefore indicate in a few words the principal agents which may be used to oppose the different symptoms. One important symptom of hysteria consists in contractures, which are sometimes very persistent, and we should never count upon their spontaneous resolution. Success in treating them will be influenced to a great degree by the promptness with which treatment is begun. One granule of hyoscyamine should be given every quarter of an hour, or three of croton chloral with the same frequency. For the paralyses we should give two granules of phosphoric acid or of phosphide of zinc three or four times daily. Hyperæsthesia may be treated with local stimulant applications and the internal use of two granules of cicutine every hour until relief is obtained; for anæsthesia we should give five granules of nitrate of pilocarpine three to four times daily, combining with it three granules of valerianate of zinc three times daily.

HYSTERIA.	DOMINANT.	Want of nervous equilibrium . .	Aconitine, digitaline, hyoscyamine, arseniate of strychnine.
	VARIANT.	Contractures . .	Hyoscyamine, salts of atropine.
		Paralyses . . .	Phosphoric acid, phosphide of zinc.
		Hyperæsthesia . .	Cicutine, croton chloral.
		Anæsthesia . . .	Nitrate of pilocarpine, valerianate of zinc.

Icterus.—Icterus is a symptom which is common to different morbid conditions, but must be studied by itself, for it requires particular treatment not only when it is a feature of a disease which has been correctly diagnosticated, but also when it belongs to diseases which have not been recognized, or concerning the diagnosis of which there is doubt. It may be due to the retention of bile in the biliary ducts, or it may occur when there is no retention of bile. Retention is due to different causes—obstruction, inflammation, spasm, external pressure. Obstruction is almost always caused by biliary calculi, which prevent the passage of the bile into the intestine. Its treatment consists principally in the use of cholagogues, or podophyllin in five-granule doses once or twice daily, and suitable mineral waters. Inflammation diminishes the caliber of the canals, and also gives rise to obstruction on account of the resulting exudate, thus causing catarrhal icterus. As this inflammation is almost always due to the extension of a gastro-duodenitis, the protopathic lesions must be carefully treated. A milk-diet and two granules of cotoine every two hours will fill this indication. Catarrhal icterus itself should be treated with two granules of calomel and two of arseniate of soda every two hours. Icterus may also result in consequence of the retention of bile on account of spasm, this variety being known as nervous icterus. A granule of hyoscyamine every three hours and saline laxatives (Sedlitz Chanteaud) will quickly restore the flow of the bile. Retention may also be caused by the pressure which may be exercised by tumors of different kinds upon the excretory canals. The removal of the cause, and the use of strychnine to aid the fibro-muscular coat in overcoming the obstacle, constitute the most rational treatment. Icterus which is manifested when there is no retention of bile (the fæces giving evidence of biliary influence, while in cases of retention they are white and clay-like) may be due to polycholia—that is, exaggeration of the bile-secreting function—so that the canals can not entirely evacuate themselves into the intestine, whence resorption follows just as in cases of retention; or it may be due to toxæmia, either because the changed functions of the canals permit an abnormal resorption, or because the red globules are destroyed, their hæmaglobin being changed in the blood into bilirubin. In this latter class are included the grave forms of icterus which appear to be produced by infectious intoxication of a parasitic character. The analogy which this form presents, as to its symptoms and progress, with the symptoms and progress of many other infectious diseases, warrants this hypothesis. It would, therefore, seem reasonable that the salicylates, especially the salicylate of quinine, and possibly the sulphide of calcium as well, should be useful in these cases. As to the variant, the following indications are to be filled: Constipation should be treated with three to five granules of podophyllin twice daily, and in the morning a spoonful of Sedlitz Chanteaud. The dyspepsia, which is due to a deficiency of bile, the latter causing unusually rapid decomposition of the contents of the intestine and imperfect elaboration of the food, may be modified by the use of three granules of quassine and three of elaterine before each meal. Pruritus, which accompanies icterus, and is sometimes almost unendurable, may be relieved either by taking two granules of croton chloral every quarter of an hour until relieved, or by acetic-acid baths, a quarter of a liter of acid being used to fourteen liters of warm water. The diminution in the number of pulse-beats which is produced by the action of the biliary acids, and the hypochondria which has such a depressing action upon the patients, may be treated with two to three granules of the arseniate of strychnine three times daily. Hæmorrhages call for a combination of two granules each of arseniate of strychnine and ergotine every two hours. Chronic icterus has two particular indications which should not be overlooked. The first consists in inciting the contractility of the fibro-muscular tunic of the biliary passages to compensate the atony which results from dilatation of the canals in consequence of the accumulation of bile. The second is the necessity for destroying the bilirubin which is in the blood by pulmonary oxygenation. For the atony two granules of strychnine four or five times daily may be given; for the failure of oxygenation, exercise, gymnastics, inhalations of oxygen, or aërotherapy may be prescribed.

ICTERUS.

DOMINANT.	From retention of bile .	Obstruction .	Cholagogues, benzoate of lithia.
		Inflammation	Cotoine, milk diet. Calomel, arseniate of soda.
		Spasm . .	Hyoscyamine, Sedlitz Chanteaud.
		Compression	Strychnine.
	Without retention of bile.	Polycholia .	Podophyllin, Sedlitz Chanteaud.
		Toxæmia .	Arseniate of strychnine.
		Infection .	Salicylate of quinine.
VARIANT.	Constipation		Sedlitz Chanteaud, euonymine, podophyllin.
	Dyspepsia		Quassine, elaterine.
	Pruritus		Croton chloral.
	Diminution of the pulse . .		Arseniate of strychnine.
	Hypochondria		
	Hæmorrhages		Sulphate of strychnine, ergotine.
	Retention of bilirubin . .		Exercise, diuretics.

Incontinence of Urine.—This condition may come from such different causes that it should properly be considered as a symptom and not a distinct disease. Its frequency, however, compels all authors to make particular allusion to it, and to give it a particular place in their nosological classifications, and, in addition, to prescribe the treatment which is appropriate for it under different circumstances. Most of the cases which are met in practice belong rather to surgical than medical affections. Others, on the contrary, which are included under the term nocturnal incontinence, have nothing to do with surgery, and come entirely within the domain of medical therapeutics. This class of cases is especially referred to in this chapter, but advantage is also taken of this opportunity to observe that, in surgical cases, the surgeon should take pains to remedy the condition which affects the vitality of the diseased organs, if he does not wish to replace the existing disease with one which is more severe. Permanent catheters, for example, are dangerous in these cases, for the urine becomes readily changed, and phosphatic salts are deposited around the catheter, which may become foci for the development of calculi, while the urethral and vesical mucous membranes may also be inflamed by the prolonged contact with them of a foreign body, and complications which are more or less grave may result. The methodical evacuation of the bladder, in place of the natural evacuation, may be substituted in cases in which there is paralysis of the organ, for in this way overdistention of the organ, with consequent relaxation of its muscular fibers, may be avoided. Strychnine and ergotine are the drugs which should be used in treating this condition. In these cases, as in cases of paralysis of the sphincter, these two drugs may be depended upon, a cure being a question only of time and dosage. In many cases among the aged the author has seen the paralysis disappear when a return of vesical contractility could not be anticipated, and this from the use alone of these two drugs. Strychnine must be given in constantly increasing doses; ergotine, on the other hand, must be given at intervals, in order to avoid a possible capillary gangrene. In nocturnal incontinence the use of strychnine will constitute the treatment of the dominant, because there can be no incontinence without a certain degree of relaxation of the sphincter. In many cases, however, it is not this relaxation nor the atony of the sphincter which causes the unconscious discharge of the urine, for it may be due to a change in some of the vital elements which are concerned in the normal discharge of the urine, the physiological equilibrium being thus disturbed.

The factors which are concerned in the emission of the urine are several, and include the chemical composition of the urine and its quantity, the degree of irritability of the mucous membrane, the nerves which transmit impressions from the periphery, and the nervous centers which transform them into sensation; the brain, which perceives the sensation; the will, which directs the contraction of the muscles; the sphincter, which opposes the passage of the urine; and the muscular tunic of the bladder, which overcomes this resistance. If there is increase or diminution in any of these elements in the excretory act, the emission of urine will cease to be normal. Should the sphincter offer less resistance than is normal, the urine will pass off involuntarily. Such cases may be readily cured by strychnine and by hydrotherapy, which will increase the resisting force of the sphincter. With children it is well to take the precaution to cause them to arise and evacuate the bladder in the middle of the night, so as to prevent too great an accumulation within it. If, on the other hand, the brain no longer recognizes the necessity of emptying the bladder, there are means which are very efficacious for remedying this defect. Atropine and caffeine, given at bedtime in gradually increasing doses, will accomplish excellent results, and this treatment should be continued until a cure is effected. In most cases two to three granules of atropine, and four to six of caffeine, given every evening in one dose, or in several should the patient be inclined to wakefulness, will be sufficient to effect a cure for this trouble, which, though it may not appear to be of great gravity, should be attended to, for it may lead to spermatorrhœa, and even to epilepsy. In other cases the brain is conscious of the necessity for evacuation of the bladder, but the child (if it be a child) can not exert sufficient will-power to overcome the muscular inactivity which accompanies sleep. Corporal punishment in such cases usually does little good. Vesicants applied over the sacral region are sometimes effective, but the use of caffeine is preferable, and the requirement that the child should completely empty his bladder as often as he is compelled to rise from his bed. In other cases the sensitiveness of the vesical mucous membrane is increased, either from the excess of irritant properties in the urine, as an excess of uric acid, or from irritation proceeding from neighboring organs—for example, the irritation caused by ascarides, indigestion, etc. In such cases small quantities of urine produce the same impression upon the bladder that is produced by large quantities in the normal condition, and, as a result, the sensibility of the brain is blunted by the frequent repetition of the same impression. Three to six granules of cicutine and of bromide of camphor may be given daily, five to eight of santonine and of calomel twice daily, six of the benzoate of soda and of asparagine daily, and, if the conditions indicate, two granules of pepsin and of iron with each meal, and Sedlitz Chanteaud in sufficient quantity.

INCONTINENCE OF URINE.

1st. From the Forced Opening of the Sphincter and the Urinary Passages (Incontinence from Regurgitation).

Paralysis of the bladder . . .	Methodical evacuation of the bladder by surgical means, strychnine.
Hypertrophy of the prostate . .	Methodical evacuation, ergotine, quinine.
Obstacles in the urethra . . .	Surgical intervention.

2d. From Permanent Opening of the Sphincter (True Incontinence).

Paralysis of the sphincter . . .	Hypophosphite of strychnine. Faradization.
Organic lesions of the prostate . .	Dorsal decubitus, treatment of the cause.
Foreign bodies	Treatment of the cause.

3d. From Intermittent Opening of the Sphincter (Essential, Nocturnal, or Infantile Incontinence).

Atony of the sphincter . . .		Hypophosphite of strychnine. Hydrotherapy.
Cerebral torpor		Atropine, hyoscyamine. Daturine, caffeine.
Torpor of the will		Moral and preventive means. Caffeine.
Increase in the irritability of the bladder	From excess of uric acid . . .	Benzoate of lithia.
	Ascarides in the rectum . . .	Santonine, calomel.
	Changes in digestive power . . .	Lactate of iron, pepsin. Sedlitz, etc.

Indigestion.—Difficulties in the digestion of ingested food may arise from excess as to their quantity, from the accidental absence of the gastric juice, or from suspension of the peristaltic motion of the stomach. When the quantity of food or of drink has been too great, the two other conditions of apepsia mentioned may be realized; for, on the one hand, the usual quantity of the gastric juice will not suffice to effect chymification of the unusual quantity of food, and, on the other, mechanical dilatation of the stomach will weaken the energy of its contractility and produce temporary paralysis. The means to be employed in the different conditions will differ in accordance with the cases. If indigestion is due to an excess of peptonizable food, three granules of pepsin may be given every half-hour. If the excess consists of starchy foods we should give the same quantity of diastase. Gastric atony, which always accompanies this form, should be treated with two granules of quassine every quarter of an hour. If indigestion is caused by excitement of the reproductive apparatus, by violent disturbance of any kind, etc., a granule of sulphate of strychnine should be given every quarter of an hour, and nourishing food in small quantities. For the intense headache which sometimes accompanies indigestion, a granule of caffeine should be given every half-hour. If the circulation of the brain seems to be affected, apomorphine should be administered hypodermically, to excite vomiting, if this result has not been obtained by other means, such as putting the finger down the throat, tickling the palate, etc. After the attack has been brought under control, we should give Sedlitz Chanteaud to relieve the digestive canal of any undigested food which may remain, and to overcome the saburral condition which follows these disorders of digestion; two granules of quassine should also be given before each meal to restore to the stomach the energy which was suspended by its overwork.

INDIGESTION.	DOMINANT.	Gastric atony	Quassine.
		Apepsia	Pepsin, diastase.
	VARIANT.	Cephalalgia	Caffeine.
		Apoplectiform condition	Emetics.
		Saburral tongue	Sedlitz Chanteaud.

Infection, Paludal.—There is no doubt but that miasmatic intoxication results from the presence in the organism of a poison which is produced in marshy and other places where decomposition of vegetable matter is freely taking place. The toxic agent must be a living organism, for the regularity in the periodicity of the attacks can only be explained by considering such a cause. The dynamic perturbations which this agent produces are related to the vaso-motor system, as is evidenced by the contraction in the peripheral vessels and the congestion of the spleen. As a causal dominant, quinine should be given to antagonize the infection, for experience has shown that it is the most prompt in its action, and the most efficient of all the agents which have been proposed for malarial or paludal poisoning. As a vital dominant, we should give strychnine, the excito-motor properties of which are sufficiently known. Large doses of quinine are, as a rule, useless and even dangerous. Three to six granules of the hydroferrocyanate of quinine every hour, combined with one of the arseniate of quinine, will usually be sufficient to rapidly control the periodicity of the attacks. The hydroferrocyanate may be replaced by some other salt of quinine if the indications warrant it. In the neuralgias of malarial origin the hydrobromate will be preferable, in spasmodic conditions the valerianate, and in rheumatic conditions the salicylate, the dose of each being three to five granules daily. If we seek to apply a still more active means of treatment without increasing the doses of quinine, six to eight granules of arsenious acid daily may be added. If the digestive organs are in bad condition, the tongue being heavily coated, constipation being present, etc., the treatment should be commenced with an emetic, for otherwise we could have no assurance that the medicaments would be absorbed. For this purpose three granules of emetic may be given to an adult every ten minutes; to a child, emetine in similar quantities, being careful to dissolve the drug in a little water before administering it, that the effect may be more prompt. If the gastric disturbance is not decided, a large spoonful of Sedlitz Chanteaud dissolved in sugar-water or in a bitter infusion may be all that will be required. During the chill we should give one-granule doses of phosphoric acid or hypophosphite of strychnine every half-hour until reaction occurs; the shorter this stage, the less intense will the disease be, and the easier its cure. During the febrile stage we should use a granule of aconitine every half-hour, and continue it until sweating commences. In the sweating stage we should return to the strychnine, and begin the antiperiodic treatment with quinine and arsenious acid. The headache, which is sometimes intense and may be aggravated by large doses of quinine, which also causes insomnia with consequent fatigue and weakness of the patient, should be treated with two granules of arseniate of caffeine every hour. If there is anorexia even during the apyretic period, three granules of quassine should be given before each meal. The appetite must not be neglected even in cases in which the appearance of the tongue contra-indicates the use of solid food. The repetition of the febrile attacks, and the destruction of the red corpuscles by the paludal poison, will quickly cause a condition of anæmia for which one should give one to ten granules of arseniate of iron daily. If hæmorrhages occur, we should administer three granules of ergotine and three of sulphate of quinine every quarter of an hour. In that variety of malarial poisoning which yields the so-called pernicious fever, quinine is still the sovereign remedy, but as time is precious in such cases, and as we can not always be certain of gastro-intestinal absorption during the attack, the lactate or hydrobromate of quinine must be given hypodermically. Remittent fever requires the same treament as intermittent, but it is less urgent in character because the progress of the disease is slower. In this condition we may use a granule of strychnine every two hours daily, and, in the course of a day, thirty or forty granules of the hydroferrocyanate, the sulphate, or the salicylate of quinine in addition. Masked or larval fevers, when their true nature is recognized, are treated in the same way as the regular forms. It must not be forgotten that periodicity in the attacks, which most frequently occur between midnight and midday, is the characteristic which will lead us to a knowledge of the true character of the disease. A successful result of the use of antiperiodic agents will remove any doubts as to the diagnosis which may have existed.

PALUDAL INFECTION.	DOMINANT.	Paludal miasm	Quinine, arsenious acid.
		Vaso-motor paralysis	Strychnine.
	VARIANT.	Chills	Arseniate of strychnine.
		Headache	Arseniate of caffeine.
		Anorexia	Quassine.
		Gastric disorder	Sedlitz Chanteaud, emetic. Emetine.
		Hyperthermia	Aconitine.
		Anæmia	Arseniate of iron.
		Hæmorrhage	Ergotine, sulphate of quinine.

Infection, Purulent.—See Traumatic Fever.

Laryngitis, Acute Catarrhal (*Stridulous Laryngitis*, *Pseudo-Croup*).—Acute inflammation of the larynx, whether due to internal or external causes, should be treated with aconitine, which is not only the antiphlogistic agent *par excellence*, but has the additional merit of almost always satisfying the causal indication, because the greater number of cases of acute laryngitis are due to suppression of the perspiration, which is restored by the use of only a few granules of aconitine. This drug should, therefore, have the preference in all acute cases, one granule being given every half-hour until a sedative or diaphoretic effect is obtained. Subacute laryngitis, in which the pain is slight and the fever moderate, does not require such active treatment; one granule every two hours will suffice. The fever of this condition will also yield to the influence of aconitine, which should be administered until defervescence has occurred. After the fever has abated, the symptoms may be treated in succession. Cough and hoarseness should be treated with one granule of one of the active principles of opium and one of iodoform every quarter of an hour until relief has been obtained. Codeine should be preferred to the other active principles of opium if a child is being treated, Gregory's salt if the cough is of moderate intensity in an adult, and the hydriodate of morphine if the cough is continuous and fatiguing. Iodoform, which is useful for hoarseness, is in many cases offensive to sensitive patients. In such cases two-granule doses of benzoic acid every hour should be substituted. The granules should be dissolved in the saliva before being swallowed, in order to get the benefit of their local action. The collections of mucus which adhere to the vocal cords are sometimes the cause of suffocation, especially in children, on account of the mechanical obstruction to the entrance of air which they offer. Even in the severest cases we may administer emetine in three-granule doses, dissolved in warm water, giving it every ten minutes until the patient vomits. By this means the exudation will be dislodged, and facility of respiration will be restored. If the case is not urgent, instead of exciting vomiting, we should trust to the slower but equally effective action of sulphide of calcium, which may be given in two-granule doses every hour to aid in breaking up the accumulations of mucus, and hasten the resolution of the inflammation. The presence of an exudate, or excessive irritability of the larynx, will produce, especially in children, a kind of dyspnœa, which is caused by spasm of the glottis. This condition bears the name of stridulous laryngitis, or pseudo-croup. A granule of hyoscyamine every hour, or half a granule for children under six years of age, or two granules of the sulphide of calcium every half-hour, will promptly relieve this condition, which is always painful, and sometimes is dangerous. The headache which occurs in the first days of the disease may be relieved by the use of two granules of caffeine every hour, or three of the bromide of camphor every hour. Pain in the larynx will not necessarily require treatment, especially if the patient is wise enough to abstain from talking; should medication be required, however, three granules of codeine may be given every half-hour until an anodyne effect is obtained. Spasmodic laryngitis is sometimes repeated in a manner which plainly shows its intermittent character. This periodicity may be controlled by the use of three granules of the hydrobromate of quinine and one of hyoscyamine every three hours. With laryngeal inflammations the more frequent their recurrence the greater the susceptibility to additional attacks. In order to overcome this susceptibility to impressions of cold, two granules of arseniate of strychnine and two of sulphide of calcium should be given three times daily for a long time. Hydrotherapy and light clothing, by fortifying the skin against external impressions, are excellent adjuvants to internal treatment of a preventive character.

ACUTE LARYNGITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Cough	Codeine, Gregory's salt.
		Hoarseness . . .	Iodoform, benzoic acid.
		Mechanical dyspnœa .	Emetine, sulphide of calcium.
		Spasmodic dyspnœa .	Hyoscyamine.
		Headache . . .	Caffeine.
		Fever	Aconitine.
		Pain	Codeine.
		Intermittence . .	Hydrobromate of quinine.
		Catarrhal predisposition	Arseniate of strychnine. Sulphide of calcium.

Laryngitis, Chronic.—Chronic inflammation of the larynx may be simple or constitutional, and may or may not be accompanied with ulceration. The ulceration is the consequence of the long duration of the disease, and should be treated topically in addition to the internal treatment which is directed toward its cause. The local treatment may consist in the use of a spray containing equal parts of sulphur-water and tar-water. The internal treatment includes both the dominant and the variant, the former being the most important and the most efficacious. If the laryngitis is purely of a catarrhal character, we may give two granules of sulphide of calcium and two of helenine three to five times daily. Revulsives, hydrotherapy, and a suitable change of climate will also be of great service. Laryngitis which depends upon a general disease should be treated in accordance with the nature of the primary complaint. Syphilitic laryngitis of the first period should be treated with two to five granules of the protiodide of mercury three times daily, or with two to three granules of the biniodide three times daily. Syphilitic laryngitis of the secondary period should be treated with three to five granules of iodoform three times daily, while upon the ulcerations Van Swieten's solution should be applied. Laryngitis of the tertiary period is almost always caused by suppurating gummata, and should be treated with two to three granules of iodoform and the same quantity of arseniate of soda three times daily. Laryngeal tuberculosis and laryngitis in tuberculous subjects may also be modified by the use of iodoform, three granules being given every three hours, with two of the arseniate of soda or of iron three or four times daily. Laryngitis which is the result of variolous pustules may be treated with repeated doses of sulphide of calcium, one to three granules being given every half-hour; this drug also tends to attenuate the infectious element of the disease. Laryngitis which accompanies typhoid fever and *typhus exanthematicus* should be similarly treated, two granules of the salicylate of ammonia every hour being added. The dysphonia of the disease will rarely require particular treatment. Two granules of tannic acid four times daily will modify the vitality of the larynx, and will prove very useful by its local astringent action. The cough and pain, which may be very troublesome to the patient, may be relieved by the use of two granules of the hydrobromate of morphine every quarter of an hour until relief is obtained. Dyspnœa may result from several causes, of which stenosis of the larynx is the principal one, and this may be due to particular lesions or to the accumulation of exudate. Emetine in doses of three to five granules every ten minutes until vomiting results, followed by two granules of the sulphate of strychnine every hour, constitute the best means for relieving the dyspnœa. Should suppuration follow the chondritis and perichondritis, two granules each of iodoform and arseniate of soda may be given three or four times daily. The foregoing suggestions as to treatment should be followed out for a long time, and accompanied with suitable hygienic precautions.

CHRONIC LARYNGITIS.	DOMINANT.	Catarrhal element		Helenine, sulphide of calcium.
		Infectious element	Syphilitic	Iodoform, mercury.
			Tuberculous	Iodoform, arseniate of soda.
			Variolous	Sulphide of calcium.
			Typhous	Salicylate of ammonia.
	VARIANT.	Dysphonia		Tannic acid.
		Cough		Hydrobromate of morphine.
		Pain		
		Dyspnœa		Emetine, sulphate of strychnine.
		Suppuration		Iodoform, arseniate of soda.

Laryngitis, Stridulous. — See Acute Catarrhal Laryngitis.

Leucocythæmia.—Leucocythæmia implies a condition in which the number of the white blood-globules is greatly increased and the red globules greatly diminished. This permanent excess and disproportion of the leucocytes are due to functional and nutritive irritation of the hæmatopoietic organs, and require the administration of two granules of hydrobromate of cicutine and of iodoform five times daily. The physical and moral prostration which is experienced by sufferers with this disease should be met by the administration of two granules of the arseniate of strychnine three to five times daily. The anorexia, which tends greatly to aggravate the disease, will be relieved by giving two to four granules of quassine a short time before each meal. For the constipation, three to five granules of podophyllin should be given each evening. Should diarrhœa occur, and this is not unusual, especially when the chyliferous ducts are attacked, three granules of pepsin should be given with each meal to facilitate digestion, and two granules of the hydriodate of morphine every two hours, that the food may be detained in the alimentary canal a sufficient time to insure absorption. For the accompanying ulcerative stomatitis, we should use suitable mouth-washes and two granules of the lactate of iron every two hours. Dyspnœa, which results from the absence of a vehicle for the oxygen which is inspired by reason of the diminution of the red globules, and frequently on account of the swelling of the bronchial glands, should be treated with inhalations of oxygen, which is the only means by which the patient can be rapidly relieved. Swelling of the spleen, the liver, and the glands should be treated by the dominant, to which three granules of ergotine three to five times daily may be added. The results which are produced by quinine in analogous conditions may induce us to try it in this, and three granules of the hydrobromate may be used every two hours. Fever is almost always present toward the end of the disease, for which one granule of quinine is indicated every two hours or less, according to the degree of hyperthermia. For hæmorrhage, which sometimes occurs, we should give three granules of ergotine every two hours, adding in appropriate cases two granules of the phosphate or valerianate of iron every two hours. Hydrotherapy, exercise, and change of air are hygienic means which must not be overlooked in the treatment of this dyscrasia.

LEUCOCYTHÆMIA.	DOMINANT.	Irritation of the hæmatopoietic organs	Hydrobromate of cicutine, iodoform.
	VARIANT.	Prostration	Arseniate of strychnine.
		Anorexia	Quassine.
		Constipation	Podophyllin.
		Diarrhœa	Hydriodate of morphine.
		Ulcerative stomatitis	Lactate of iron.
		Dyspnœa	Inhalation of oxygen.
		Glandular swellings	Ergotine.
		Fever	Aconitine.
		Hæmorrhage	Ergotine.

Leucorrhœa.—Leucorrhœa is a symptom which is common to vaginitis and to chronic metritis. In the first case, the vaginal hypersecretion has little effect upon the general condition, and is scarcely to be considered as a disorder; in the second, it is accompanied by rapid loss of strength, capricious appetite, nervous troubles, both of sensibility and motility, and is a true morbid condition, which requires for its cure a rational, energetic, and persevering plan of treatment. Examination with the speculum should always precede a course of treatment, and frequently one will find ulcerations, granulations, foreign bodies, etc., which must be suitably treated before general treatment is instituted. The difficulties which are encountered in manipulations of this kind furnish a motive for the careful examination of the physical properties of the white material which is discharged as the first step in therapeutic action. Leucorrhœa, which continues or increases with the approach of the menstrual period, demonstrates that congestion is the primary morbid process; whether this congestion is active or passive can not be said, because the characteristic signs are wanting. Apparently the condition is one of atonic hyperæmia, or of lymphatic congestion, rather than a true afflux of blood to the vaginal mucous membrane. The excito-motor action of ergotine upon the genital organs indicates it as the dominant in this condition, and with it strychnine may be associated. Two granules of each, either separately or combined, may be given four times daily. For topical applications any of the astringents may be used, though tannin is to be perferred. A mixture of three grammes of tannin and thirty of glycerin may be used to saturate pledgets of cotton wool, and the latter be introduced in sufficient quantity into the vagina and retained for twenty-four hours. Vaginal injections with a solution of borated chloral are also useful, especially if the discharge is offensive. Anæmia and chlorosis, whether acting as cause or effect of this condition, should be treated with arseniate of iron and other appropriate means. (See Anæmia.) The debility which always accompanies this condition, to a greater or less degree, should be treated with one granule of the arseniate of strychnine four times daily. Irritability, melancholy, and other neuropathic conditions which are seen in connection with leucorrhœa, will disappear under the use of three granules of bromide of camphor three to four times daily. Palpitations, which are almost always caused by depression of a moral character, indicate the use of two granules of caffeine four times daily, or three of valerianate of caffeine four times daily. For gastralgia two granules of valerianate of zinc should be given three times daily, or two of the cyanide of zinc before each meal. Constipation, which is so common in all conditions in which there is loss of nervous equilibrium, should be treated with two granules each of hyoscyamine and veratrine morning and evening. Quassine may be given to regulate the appetite, which is often capricious. Leucorrhœa of long duration is sometimes complicated with prolapses of the vagina, and may be relieved by the use of ergotine and strychnine, as already indicated, together with appropriate local means for overcoming muscular relaxation. A condition of herpes often contributes to the persistence of chronic vaginitis, and should be treated with two granules of sulphide of calcium five times daily. The lymphatic diathesis should be treated with iodoform combined with the arseniates. Visible results may be expected after a few weeks of treatment with two granules of iodoform, two of arseniate of iron, and three of ergotine daily. But, if this plan of treatment does not result in diminution of the discharge, it will be almost useless to resort to any other, for the result will be equally negative. In rebellious cases it may be well to try the effect of injections of nitrate of silver, in the hope of modifying the condition of the mucous membrane. This plan should only be resorted to in exceptional cases, for great inconveniences are associated with it, and its efficiency is more than doubtful.

LEUCORRHŒA.	DOMINANT.	Atonic hyperæmia	Ergotine, strychnine.
	VARIANT.	Anæmia	Arseniate of iron.
		Debility	Arseniate of strychnine.
		Irritability	Bromide of camphor.
		Palpitations	Caffeine.
		Gastralgia	Valerianate of zinc. Cyanide of zinc.
		Constipation	Hyoscyamine, veratrine.
		Irregular appetite	Quassine.
		Prolapse of the vagina	Ergotine.
		Herpetic diathesis	Sulphide of calcium.
		Lymphatic diathesis	Iodoform, arseniates.

Lithiasis, Biliary.—Biliary lithiasis results from the precipitation of some of the elements of the bile, calculi being formed, which will vary in size from the head of a pin to a hen's egg. The cause of this precipitation may be a relative disproportion in the different elements of the bile or the presence of mucus in the bile-ducts, the mucus serving as centers around which concretions are formed in a manner analogous to the formation of thrombi in the vascular system. All the conditions which concur in increasing the quantity of cholesterin (e. g., expenditure of nerve-force), in producing biliary stasis (e. g., insufficiency of food), in causing hyperæmia of the liver (e. g., a sedentary life), as well as the modifications of the secretions which are included under the general term of arthritic diathesis, are predisposing causes which must be taken into consideration in arranging a plan of treatment. The principal indications which must be considered in the treatment of this disease may be reduced to two:

1. To facilitate the removal of calculi which are already formed.

2. To prevent the formation of new calculi.

To satisfy the first indication, we have two classes of agents, one of which is used to diminish the volume of the concretions, and the other to enlarge the caliber of the canals which are to be traversed. Science does not yet possess unfailing means for dissolving biliary calculi, except as they are to be found in the sodium waters of Vichy, Carlsbad, and Gerez. These waters have an incontestable efficiency, which is proved by the number of cases in which calculi have been eliminated after their use; and this must be taken as a proof that their elimination has been facilitated by a diminution in their size. As a substitute for these waters, we may prescribe the salts of lithia, six to ten granules of the benzoate being given daily, or four to six granules of the carbonate, the benzoate being preferred, because it is both cholagogue in its action and lithontriptic. The biliary canals are furnished with a fibro-muscular tunic, are therefore contractile, and are, in addition, abundantly supplied with sensory nerve-filaments. If the calculi are subjected to the slightest arrest in their passage, spasm and violent pain in the liver are the result, which render their elimination still more difficult. The spasm should be treated with hyoscyamine or its congeners, valerianate of atropine and daturine, one granule being given every quarter of an hour when the hepatic colic is intense, or two granules twice daily if the pains are less severe, but of frequent occurrence. The pain which is due to the spasm, and also serves to intensify it, should be treated with three granules of the hydrochlorate or the hydrobromate of morphine every quarter of an hour. The morphine will also serve to check the vomiting, which is another symptom; but, should the stomach be so sensitive that the medicaments are rejected before there is any opportunity for their absorption, morphine combined with atropine should be injected subcutaneously in doses of fifteen or twenty drops of the following:

℞ Morphinæ hydrochl...... 0·10 gramme.
Atropiæ sulph............ 0·01 "
Aquæ destil.............. 20·00 grammes.

The pain may be so severe as to cause lipothymia or syncope. In such cases, no uncertain remedies are allowable; and hence, if lipothymia is present, the evidence of musculo-nervous atony, a granule of hyoscyamine and one of arseniate of strychnine should be given every half-hour to restore the equilibrium, and allow the calculi to proceed on their way without affecting the vitality of the fibro-muscular tunic. Gastralgia should be treated in precisely the same way as hepatic colic, the cause being the same. It frequently happens with patients who are the subjects of biliary lithiasis that there are attacks of intermittent fever which occur regularly at four or five o'clock in the afternoon. They are caused by the irritation of the calculi, which is aggravated by the hepatic hyperæmia which accompanies the labor of digestion. For this complication we should use two granules of aconitine three times daily and two of arseniate of quinine every hour. To prevent the formation of new calculi we should use the same means as are used for their solution; but, above all things, we should carry out the hygienic indications which are made manifest by a study of the predisposing causes. Influenced by such an investigation, we would be likely to advise very active exercise, vegetable diet, the daily use of Sedlitz Chanteaud, of sulphate of soda, or of purgative mineral waters which contain this salt—for example, Pullna, Hunyadi Janos, etc.—tranquillity of mind, and such intellectual labor as shall not cause fatigue. The daily use of the cholagogues in small quantities, which shall not irritate the gastro-intestinal canal, is proper. Three granules of podophyllin may be taken every evening, ten of euonymine before dinner, five to eight of iridine, or ten to twenty of hydrastine or leptandrine in two equal doses daily. All of these drugs excite evacuation of the bile without increasing the number of the biliary salts. They may therefore be used for a long time without fear of producing harmful irritation, if care is taken to change them from time to time. Quassine also excites the secretion of the bile, though to a lesser degree; it has the additional advantages of increasing the appetite and regulating the digestion, which are not to be despised in the case of patients who are afflicted with this disease, and are often in a condition of absolute cachexia.

BILIARY LITHIASIS.	DOMINANT.	Biliary concretions	Benzoate of lithia. Alkaline mineral waters.
	VARIANT.	Spasm	Hyoscyamine.
		Pain	Hydrobromate of morphine.
		Vomiting	Morphine, atropine.
		Febrile attacks	Aconitine, arseniate of quinine.
		Biliary stasis	Podophyllin, euonymine, iridine, hydrastine, leptandrine, quassine.

Lithiasis, Renal.—The treatment of renal lithiasis follows the same rules as that of biliary lithiasis. The difference in the cause and the chemical composition of the calculi, however, requires certain modifications of those rules. Renal lithiasis may be divided into acid and alkaline varieties, the first being of uric- or oxalic-acid origin, the second of calcareous or ammoniacal. The treatment should have for its object, first, the expulsion of the calculi which have formed; second, the antagonism of the causes which produce the calculi, that no more may be produced. In order to expel calculi from the kidneys, we should use diuretics as physical agents, solvents as chemical agents, and mydriatic antispasmodics as dynamic agents. Diuretics are proper in all cases; but they must be used only at proper intervals, and always with moderation, so as not to fatigue or irritate the organ. The diuretic which is most certain in its action, the most decidedly physiological, and the best tolerated, is good drinking water. By its action in increasing diuresis it may be hoped not only that the uriniferous tubes will be dilated, but also that the calculi will be expelled by pressure, and that the lubricating action of the water will facilitate their progress. The chemical means for dissolving calculi are of little importance. With the exception of lithia and the alkaline mineral waters, little benefit can be expected from the so-called lithontriptics. The alkalies should be given dosimetrically—that is, in small and frequently repeated doses. The action of alkaline waters taken in this way and at the springs where they are produced is certainly excellent, and almost always causes the ready expulsion of calculi of larger or smaller size. Lithia may be given, under the form of granules of the benzoate or the carbonate, in three-granule doses, three or four times daily. Large doses are useless, for they do not find in the economy sufficient quantities of free carbonic acid to dissolve them. These agents are of particular usefulness in the uric-acid lithiasis, but also in the oxalic-acid form. The suppression of the causes, which is always necessary in any rational plan of treatment, is absolutely indispensable in this condition; for, since oxaluria is the evidence of a diathesis which is caused by the use of certain articles of food which contain the abnormal elements in large quantities—such articles, for example, as sorrel and onions—all that will be necessary to cause the disappearance of the diathesis will be that the patient abstain from these articles of food. The alkaline varieties of lithiasis should receive treatment with three granules of salicylic acid three times daily, or similar quantities of salicylate of lithia. Benzoic acid may also be used with advantage in three-granule doses three or four times daily. The object of the dynamic means of treatment is to dilate the canals in which the calculi are engaged, and thus facilitate the progress toward the bladder. Such means may consist of hyoscyamine in two-granule doses two or three times daily, or sulphate of atropine in one- to two-granule doses three times daily.

The arthritic diathesis predisposes to the formation of calculi. For those who are so affected we should prescribe plenty of exercise, sobriety at the table, moderation with respect to the sexual appetite, and the use of two to three granules of colchicine every evening. In the variant we meet with conditions of such importance that the patient not only demands relief from them in certain cases, but regards them as the most severe, most painful, most intolerable, and most rebellious of his troubles. Of the conditions referred to, colic is the one which is of most frequent occurrence as well as the most painful. It is the result of the sensitiveness and contractility of the ureters, and it is due to these characteristics that small calculi, which may be rough and uneven, cause much more intense pain than larger ones, which are smooth and more or less polished. For the pain we should give three granules of the hydrobromate of morphine every quarter of an hour, and for the spasm one of hyoscyamine every half-hour. The vomiting which almost always accompanies the colic will also be benefited by this treatment. Rarely will it be necessary to use these alkaloids hypodermically. The vesical and rectal tenesmus will diminish as the hyoscyamine is the more efficient in its action. The hyoscyamine may be replaced by daturine, one granule being given every hour until the desired effect is obtained. Lipothymia, which may be converted into fatal syncope if the colic is of an intense character, should be treated with two granules of the arseniate of strychnine every quarter of an hour, and a free but judicious use of sedatives, especially of morphine. Convulsions, which may also be the result of intense suffering, must be treated with anodynes, to which three-granule doses of the bromide of camphor every ten minutes may be added. Hæmaturia in these cases will yield to three-granule doses of ergotine every half-hour, or the same drug may be injected hypodermically. Inflammatory symptoms, of which the most common are those which are indicative of pyelitis, may be treated with one-granule doses of aconitine every two hours, the dose being increased if the case requires it. Dysuria or anuria will require the use of diuretics. Simple water with two granules of arbutine every two hours will facilitate the excretion of urine. Hydronephrosis is the result of distention of the kidney in consequence of the retention of urine; it can only be remedied by surgical means.

RENAL LITHIASIS.	DOMINANT.	Acid lithiasis	Uric-acid calculi	Carbonate and benzoate of lithia, alkalies.
			Oxalic-acid calculi	Diuretics, removal of the causes.
		Alkaline lithiasis	Calcareous calculi	Benzoic acid, mineral acids.
			Ammoniacal calculi	Salicylic acid, salicylate of lithia.
	VARIANT.	Spasm		Daturine, hyoscyamine.
		Pain		Hydrobromate of morphine.
		Nausea and vomiting		Morphine.
		Vesical tenesmus		Hyoscyamine.
		Convulsions		Anodynes, bromide of camphor.
		Lipothymia		Arseniate of strychnine.
		Hæmaturia		Ergotine.
		Pyelitis		Aconitine.
		Dysuria		Arbutine.
		Hydronephrosis		Surgical means.

Lumbago.—See Rheumatism.

Malaria.—See Paludal Infection.

Meningitis, Cerebral.—The different varieties of meningitis may be considered, from a therapeutic standpoint, as essentially but one. In fact, whether we have simple, tuberculous, cerebral, spinal, or cerebro-spinal meningitis, we have the same element to fight in all of them—that is, the inflammatory element. In granular or tubercular meningitis, however, there is another element which is of great importance, but therapeutics is forced to neglect it, not only on account of the weakness of the arms which she wields against it, but also because it is generally the repeated inflammatory attacks which, above all other things, cause the danger which resides in this second or tubercular element. In how many cases, after an inflammatory attack has subsided, the patient regains the appearance of health in spite of the persistence of the granulations, until a new inflammation brings back the entire morbid scene! The symptoms of meningitis may be divided into two series, which constitute two allied phases. The first series presents symptoms of excitement which result from the hyperæmic condition of the meninges; the second, which is the natural consequence of the first, is derived from all the depressing results which follow every form of excessive excitement. By cutting off the inflammation, which is accomplished by preventing hyperæmia, we get control of the disease, in so far as the existing therapeutic agents will admit of such an event. In acute meningitis the dominant will, therefore, consist in the use of aconitine, in one-granule doses every quarter of an hour, until a decided antiphlogistic effect has been obtained. In chronic meningitis, and among those individuals who are predisposed to the disease by hereditary or other influences, a plan of preventive treatment must also be adopted to prevent cerebral congestion, and for this purpose we should give three granules of cocaine three or four times daily, the effect of this drug being to relieve the congestion of nervous centers. Two to four granules of digitaline, with an equal quantity of aconitine, may also be given at bedtime, to allay the irritation which is so apt to be present at that time. Tuberculous meningitis can be cured. This assertion is based upon incontestable proofs pertaining to pathological anatomy. But to accomplish this result it is indispensable that for a long period there should be no aggravation of the existing lesions, which might quickly destroy the good effects of months of treatment. Herein lies the great value of preventive treatment, when it is carried out for a sufficient length of time, and is reenforced by appropriate hygienic, physical, and moral precautions. The abolition of the granulations (tubercles) can be tested by the same means as are used in testing for scrofula. It is not necessary to limit one's efforts to the treatment of lesions which are already developed; we should also improve the entire organism, so as to prevent the development of new lesions. To accomplish this end we should give three granules of juglandine three or four times daily, with two granules of iodoform and two of a suitable salt of arsenic three times daily. In some cases the intensity of the symptoms will compel us to use other remedies than those which have been indicated in the treatment of the variant. For the fever we should use aconitine persistently, and if there is no abatement after several days of treatment a granule of digitaline and one of veratrine should be added every quarter of an hour. If the fever is more or less intermittent we have a right to suspect that it may be of a pernicious character, and treat it with large doses of quinine; five granules of the hydrobromate, with five of the hydroferrocyanate, may be given every quarter of an hour, a granule of the arseniate of strychnine being added to each dose, not only on account of its energetic antiperiodic effect, but also because it will intensify the effect of the quinine. The troublesome headache of this disease should be treated with three granules of the bromide of camphor every half-hour, if aconitine does not suffice to allay it. Hyoscyamine will arrest the vomiting, but its physiological effects must be noted, for their intensity and the rapidity with which they are produced will vary greatly in different individuals. In children we should begin by giving half-granule doses every half-hour, increasing or diminishing the quantity according to the effects which are first produced. Constipation may be corrected by the daily use of Sedlitz Chanteaud and one to three granules of hyoscyamine and of brucine every evening. For the contractures one granule of valerianate of atropine may be given every half-hour in acute cases, two granules three times daily in chronic ones, precautions with respect to tolerance of these different drugs being observed in all cases. The delirium will often disappear after defervescence has been accomplished by the aconitine; if it persists, however, three granules of the bromide of camphor may be given every hour, or we may apply ice or iced water to the head. During the convulsions one to three granules of veratrine may be given every half-hour, unless the stomach should be unable to bear it, vomiting being excited. In such a case one granule of hyoscyamine should be given in preference every half-hour, or two granules of croton chloral every quarter of an hour. The paralyses may be either temporary or permanent. The former will yield to the use of one or two granules of the hypophosphite of strychnine or of brucine every two or three hours. The same agents should be used during the entire period of depression, the activity of the treatment being regulated by the state of the pulse, and phosphoric acid being added if the vitality is much depressed. Permanent paralyses—that is, those which have already existed for some time when treatment is begun—will only be relieved, if at all, by the long-continued use of electrotherapy and suitable neurosthenic agents. Revulsives are of no use for this condition; bloodletting is dangerous; the iodide of potassium, which is used so extensively by the official school, may be profitably replaced with iodoform, of which two to five granules may be given three times daily.

CEREBRAL MENINGITIS.	DOMINANT.	Inflammatory element.	Aconitine.
		Meningeal granulations	Juglandine.
		Scrofula . . .	Iodoform, arseniates.
	VARIANT.	Fever	Aconitine, digitaline, veratrine.
		Intermittent attacks .	Hydrobromate and hydroferrocyanate of quinine.
		Cephalalgia . . .	Bromide of camphor.
		Vomiting . . .	Hyoscyamine.
		Constipation . .	Sedlitz Chanteaud, hyoscyamine, brucine.
		Photophobia . .	Daturine.
		Delirium . . .	Aconitine, bromide of camphor.
		Contractures . .	Valerianate of atropine.
		Convulsions . . .	Veratrine, croton chloral.
		Temporary paralyses .	Hypophosphite of strychnine, brucine.
		Chronic paralyses .	Electricity, strychnine, phosphoric acid.

Meningitis, Spinal.—In cases in which spinal meningitis is a primary and isolated condition, it should be attacked energetically, to prevent the inflammation from extending to the tissues which surround the inflamed meninges. This consideration is of the greatest importance, because, while meningitis is frequently curable, myelitis has not so favorable a prognosis. The dominant will consist in the use of aconitine until it has effected the complete subsidence of the inflammatory symptoms. The aconitine should be given with the view of checking the disease if possible, and, therefore, it should be administered every quarter-hour or every half-hour until the physiological or therapeutic effects appear, which indicate that the activity of the treatment may be moderated. In chronic meningitis the treatment should not be as energetic as in the acute form ; consequently, we should give only two granules of aconitine three or four times daily, adding thereto as modifiers of the nutrition two-granule doses of arseniate of soda and of arseniate of strychnine three times daily. A rise in the temperature indicates a combination of the defervescents, aconitine, digitaline, and veratrine, one granule of each being given every quarter of an hour or every half-hour until the temperature is reduced. After this end has been attained, two granules of the hydrobromate and of the hydroferrocyanate of quinine should be given every half-hour to prevent the recurrence of the fever. The pain *in* the spinal cord, and radiating from it, is due to the extension of the irritation and the compression of the sensory-nerve roots. In this condition we should add to the dominant the bromide of camphor in three-granule doses every half-hour, or one granule of cicutine every quarter of an hour until a sedative effect has been obtained. Contractures, as well as dysphagia, dyspnœa, and spasmodic retention of the urine and fæces, are due to hyperkinesia, which is caused by irritation of the motor roots of the cord. Such a condition of excitement may be relieved by using one granule of hyoscyamine every two hours, or two of croton chloral every half-hour. For the hyperæsthesia we should use two granules of the tannate of cannabine every half-hour, and for the paraplegia, which is almost always due to disturbance in the cord, revulsives and brucine internally, three or four times daily.

SPINAL MENINGITIS.	DOMINANT.	Inflammatory element	Aconitine.
	VARIANT.	Fever	Aconitine, veratrine. Digitaline, quinine.
		Pain	Bromide of camphor, cicutine.
		Contractures Dyspnœa Dysphagia Retention	Hyoscyamine, croton chloral.
		Hyperæsthesia	Tannate of cannabine.
		Paraplegia	Brucine.

Metritis.—Acute inflammation of the uterus may arise from various causes, the most frequent of which are irritations which follow parturition. The presence of tumors, the retention of the menstrual fluid, and the use of irritant injections may also cause this condition. In the puerperal condition a chill, indicating the invasion of inflammation, should be the signal for beginning the treatment. We should seek to overcome the vaso-motor paralysis, which is the first cause of congestion, by the use of one granule of strychnine and one of phosphoric acid every quarter of an hour until reaction is established. After the febrile condition is established, which indicates that congestion has become inflammation, we should give one granule of aconitine every quarter- or half-hour until defervescence occurs. If the pulse is frequent and violent, we should combine with the aconitine one granule of digitaline every half-hour until the number of the pulsations has diminished. The febrile movement is often of an intermittent character, and this symptom indicates the use of the hydro-ferrocyanate of quinine in two-granule doses every half-hour. The hypogastric pain, which in almost all cases radiates toward the lumbar region, the inguinal region, etc., may be relieved, after the inflammatory element has been brought under control, by two granules of the hydrobromate of cicutine or of croton chloral every half-hour. The constipation and diarrhœa will require the use of Sedlitz Chanteaud, at first in a purgative dose, and afterward in small quantities. The vomiting which appears as a reflex symptom of the uterine lesions may be checked by the use of two granules of the hydrochlorate of morphine every quarter of an hour, or three granules of codeine every ten minutes if the former is contra-indicated. Metritis often affects the sensibility of the rectum and bladder, causing a painful tenesmus, which will require for its relief a granule of hyoscyamine every two hours or less, according to the violence of the contractions. During the menstrual period the hæmorrhage in some of these cases is sufficiently severe and protracted to require the use of means for arresting it. For such cases three granules of ergotine and three of the sulphate of quinine may be given every half-hour, the intervals between the doses being gradually lengthened, as the circumstances permit. Rest in bed and a suitable diet are indispensable to the rapid cure of acute metritis. Chronic metritis may be catarrhal or parenchymatous. This distinction, which is made by the pathological anatomist rather than by the clinician, depends upon the predominance of lesions in the mucous membrane in the one case, and in the interstitial tissue in the other. With respect to their symptoms, the two forms of disease are distinguished by a difference as to the frequency and the abundance of their hæmorrhages, the quantity of the muco-purulent discharge, and the degree of curability, the symptoms being more pronounced in the parenchymatous variety. The chronic form of the disease is due to a want of vaso-motor vitality. The dominant should, therefore, be the arseniate of strychnine or ergotine, two granules being given three or four times daily. The general debility, which is a not infrequent accompaniment, should be treated with the salts of strychnine, while the anæmia, which is always more or less pronounced, calls for the salts of iron. The palpitations and dyspnœa, which are the result of a want of equilibrium in the nervous system, which attends all uterine diseases, become less troublesome if a few granules of digitaline are taken daily; two granules might be taken morning and evening. Irascibility and a tendency to hysteria may be modified by exercise, by suitable diversions, and by the use of three granules of the bromide of camphor or of caffeine three times daily. Want of regularity in the evacuation of the bowels should be persistently treated with the daily use of Sedlitz Chanteaud, either alone or associated with three to five granules of veratrine or podophyllin at night. Want of appetite should be treated with three granules of quassine or cubebine before each meal; a voracious or perverted appetite with three of codeine before each meal. For hypogastric pains, especially if they are characterized by exacerbations or radiation, two granules of tannate of cannabine should be given every half-hour until relief is obtained. Tenesmus should be treated with one granule of hyoscyamine or one of sulphate of atropine every half-hour, as in the acute form of the disease. For an exaggerated muco-purulent uterine discharge, we should give two granules of tannic acid four times daily, or two granules of iodoform and two of arseniate of iron three times daily, especially if the patients be of the lymphatic diathesis. Metrorrhagia, which is sometimes quite troublesome, may be treated with ergotine; but this does not always give the results which are desired, because the newly-formed blood-vessels in the adventitious tissue which pertains to the disease contain no contractile elements, and hence are not acted upon by the ergotine. Local hæmostatics will, therefore, be required, such as ice, perchloride of iron, etc. For the irritability of the uterus two granules of cicutine may be given three times daily. If the proliferation of connective tissue has been very active, occlusion of the *os internum* may have resulted, with retention of the products of exudation. These can be removed by the use of the sound. Such are the means for treating the different forms of this disease, which is always a rebellious one. In some cases the cause must be sought in a particular diathesis appertaining to the individual, and treated with the proper remedies. All other agents, with the exception of hydrotherapy and some others of that order, should be avoided as very uncertain and often dangerous.

METRITIS.

ACUTE.

DOMINANT.	Inflammatory element	Aconitine.
VARIANT.	Chill	Strychnine, phosphoric acid.
	Frequency of the pulse	Digitaline.
	Febrile intermittence	Hydroferrocyanate of quinine.
	Radiating hypogastric pain	Hydrobromate of cicutine. Croton chloral.
	Constipation or diarrhœa	Sedlitz Chanteaud.
	Vomiting	Hydrochlorate of morphine.
	Rectal or vesical tenesmus	Hyoscyamine.
	Menorrhagia	Ergotine, salts of quinine.

CHRONIC (CATARRHAL AND PARENCHYMATOUS).

DOMINANT.	Paralytic element	Arseniate of strychnine.
VARIANT.	Anæmia	Salts of iron.
	General debility	Arseniate of strychnine.
	Palpitations, dyspnœa	Digitaline.
	Hypochondria	Caffeine.
	Constipation	Sedlitz Chanteaud.
	Want of appetite	Quassine.
	Hypogastric pain	Tannate of cannabine.
	Tenesmus	Hyoscyamine.
	Muco-purulent discharge	Tannic acid, iodoform, arseniate of iron.
	Metrorrhagia	Ergotine.
	Uterine irritability	Cicutine.
	Retention of secretions	Use of sound.

Metrorrhagia.—Metrorrhagia may be due to an excessive flow of blood to the uterus, which, by undue dilatation of the vessels, forces its way out, and thus terminates a powerful active congestion ; or to a lesion of the vessels, which may vary as to character, but which makes their walls less resistant than usual, and thus causes a hæmorrhage with or without increase of intravascular pressure. The type of the first form of hæmorrhage is menstruation; of the second, the hæmorrhage from cancer of the uterus. In both cases the hæmorrhage is due to a want of vascular resistance, and to weakness in the contractile power of the coats of the vessels. The dominant in metrorrhagia will therefore be filled by medicaments which directly excite vascular contractility or the contractility of the uterine tissue, which by contracting will compress the torn vessels and diminish their caliber, thus facilitating the formation of clots and leading to complete hæmostasis. Ergotine, strychnine, and quinine are the agents which correspond to these indications, aconitine being associated with them whenever hyperæmia is manifest. Three to five granules of ergotine should be given with one of sulphate of strychnine every quarter of an hour until the hæmorrhage begins to abate; then the intervals between the doses may be lengthened, and the medicaments be finally discontinued when the danger seems to be over. The quinine should be given as a synergist of the ergotine; three granules of the hydroferrocyanate or the valerianate being given every quarter of an hour, if there is any pain; similar quantities of the hydrobromate, if there are irregular contractions; and five granules of the sulphate at a dose in other conditions, the dosage being gradually diminished, and the intervals lengthened as the effect becomes more evident. After hæmostasis has been obtained, quassine and arseniate of iron should be given to hasten convalescence. For some days after the hæmorrhage has occurred, the patient may be in a state of physical and moral prostration. At such times straining at stool must be carefully avoided, and Sedlitz Chanteaud may, at this juncture, be taken with advantage to facilitate intestinal evacuations. An auxiliary agent of tried efficiency consists in the use of vaginal *douches* of water as hot as can be borne by the patient. In addition to removing the accumulated clots from the vagina, they will relieve the congestion of the surrounding tissues and facilitate uterine contractility.

METRORRHAGIA.	DOMINANT.	Muscular atony .	Ergotine, strychnine, quinine.
	VARIANT.	Hyperæmia . .	Aconitine.
		Irregular contractions	Hydrobromate of quinine.
		Weakness following hæmorrhage . .	Quassine, arseniate of iron.
		Constipation . .	Sedlitz Chanteaud.

Myelitis.—From the standpoint of pathological anatomy, diseases of the spinal cord have called forth profound and minute investigations, and the result of this has been a classification with which it may be desirable to be familiar, though it may also be of little value in establishing a rational and effective plan of treatment. From the clinical point of view, all the forms of myelitis can be united into a single group, for the prognosis, which is grave in all of them, and the treatment, which offers equally uncertain results for all, authorize such a course, though the diseases vary greatly, as well in respect to their progress as in their anatomical *substratum*. The following table, which is borrowed from Grasset on account of the clearness of its arrangement, will serve as a guide to those who wish to make rigorous diagnoses of the different varieties of the disease:

I. SYSTEMATIC OR PARENCHYMATOUS MYELITIS.

(Its various forms begin in the nerve-elements, and become localized in particular departments of the nervous system.)

A. Pertaining to the White Matter (*fasciculated sclerosis*).

In the posterior columns .	1. In the exterior portion of the posterior columns: *posterior radicular zones*	a. Primary: *progressive locomotor ataxia.*
		b. Secondary.
	2. In the internal portion of the posterior columns. *the columns of Goll* .	a. Primary: *sclerosis of the columns of Goll.*
		b. Secondary, result of a lesion of the cord: *secondary ascending sclerosis.*
In the lateral columns, and *columns of Türck*. .	1. Primary: *symmetrical lateral sclerosis* . .	a. Without muscular atrophy: *spasmodic tabes dorsalis.*
		b. With muscular atrophy: *amyotrophic lateral sclerosis.*
	2. Secondary, in consequence of sclerosis of the brain or of the cord: *secondary descending sclerosis.*	

B. Pertaining to the Gray Matter.

In the anterior columns .	Primary	1. Chronic: progressive muscular atrophy. 2. Acute: *a.* In children: infantile atrophic paralysis. *b.* In adults: acute spinal paralysis.
	Secondary, as the result of a precedent myelitis: secondary spinal amyotrophy.	
In the bulbar foci . .	Primary: labio-glosso-laryngeal paralysis . .	Simple. With muscular atrophy.
	Secondary, as the result of different forms of myelitis: symptoms of bulbar involvement in amyotrophic lateral sclerosis, in diffuse myelitis, etc.	

II. DIFFUSE OR INTERSTITIAL MYELITIS.

(Its varieties begin and are developed in the connective tissue, and invade, indifferently, all the regions of the cord.)

A. Acute.

Not diffuse: (Circumscribed, more or less extensive) .	Fulminant apoplectiform type		Varieties: Dorso-lumbar, or cervical. Complete, or hemi-lateral. Central, or peripheric.
	Acute or sub-acute types .	Fatal. Susceptible of cure. Subject to relapses, with passage into the chronic state.	
Diffuse: (Acute ascending paralysis)	Supra-acute type. Acute type. Sub-acute type.		

B. Chronic.

Not diffuse: (Circumscribed)	Complete	Dorso-lumbar.
	Hemi-lateral . . .	Cervical.
Diffuse: (Sub-acute spinal paralysis of Duchesne; diffuse generalized myelitis of Hallopeau) . .	Type with ascending development . . .	Complete lesions. Lesions in the gray substance predominating; anterior spinal paralysis of Duchesne, peri-epididymar myelitis of Hallopeau.
	Type with descending development . . .	Lesions in the white substance predominating; annular cortical myelitis of Trousseau and Vulpian.
Particular forms		Sclerosis *en plaques.* Progressive general paralysis.

All that we need retain of the foregoing is that myelitis may be parenchymatous or interstitial, according as the nerve-cells or the connective tissue is involved; also, that it may be propagated as the result of intra- or extra-medullary tumors, of traumatic violence, of excess or fatigue, as a result of cold, of irritation of the peripheral nerves, of poisoning, or of general diseases. The bearing which a knowledge of these causes has in each particular case is very important, for no method of treatment will succeed if we do not at the same time suppress the original cause of the disease. With reference to some of these causes we are powerless; with others—for example, traumatism or syphilis—we can hope for good results from treatment. Medullary lesions begin and almost always increase by the medium of hyperæmia. We should, therefore, establish a preventive plan of treatment, which will avoid all conditions which are capable of exciting spinal congestion. To a suitable hygienic treatment we should add means which are appropriate for moderating the circulation and calming the excited condition of the nerve-centers. These two indications will be filled by aconitine and cicutine, two to four granules of each being given every evening. The dominant treatment of myelitis in acute cases will consist in the use of the defervescents, one granule each of aconitine, veratrine, and digitaline being given every half-hour. In chronic cases the actual cautery may be used, and as modifiers of the nutrition two granules of iodoform and of arseniate of soda three or four times daily. The variant in the treatment of this disease amounts to little, for the symptoms are the result of certain lesions which can not be extensively or favorably modified. Still, though we may not hope for a complete and lasting relief, it will at least be possible to diminish the pain of this disease and make it supportable. The paraplegia induced by this disease is incurable after it is established; its occurrence may be delayed, however, and its aggravation prevented in some cases by the use of two granules of the hypophosphite of strychnine three times daily, or two of phosphoric acid three or four times daily, or three of the phosphide of zinc three or four times daily. The pains, which most frequently take a darting or fulgurating character, may be relieved by the use of three granules of the hydrobromate of cicutine or of morphine every quarter of an hour, or two of croton chloral every quarter of an hour. Paralysis of the rectum may give rise either to fecal retention or incontinence. In the first case three granules of podophyllin may be given every hour, combined with one or two of sulphate of strychnine, to overcome the torpor of the intestines; in the second case five of ergotine, with two or three of the hypophosphite of strychnine, may be given three times daily. If retention of the urine can not be overcome by the use of the neurosthenics, with one granule of hyoscyamine every hour, catheterism must be resorted to, and this may excite a more or less intense cystitis. The careful disinfection of catheters must always be insisted upon, and three granules of benzoic acid or the benzoates may be given three times daily, to prevent the ready decomposition of the urine. Incontinence of urine should be treated in the same way as fecal incontinence, and for this condition rubber urinals are indispensable. Anæsthesia should be treated by means of the constant electric current, and hyperæsthesia by three granules of croton chloral every three hours, or two of the tannate of cannabine every hour. The visceral perturbations which are caused by medullary lesions—for example, gastralgias, laryngopathies, etc. —may be cured by the use of antispasmodics, either one granule of hyoscyamine being given every half-hour, or two of the bromide of camphor every half-hour. The diathetic conditions which most frequently give rise to myelopathic phenomena are syphilis and rheumatism; in the former, three to five granules of iodoform and an equal quantity of biniodide of mercury should be given three times daily; in the latter, two granules of colchicine and an equal quantity of salicylate of soda three times daily. Every one knows that scleroses never retrograde, but constantly tend to invade healthy tissue by an irresistible proliferation of the interstitial connective tissue. The physician should, therefore, be careful about promising the patient any success which he knows is impossible. He must content himself with resisting the progress of the disease, and accept the existing lesions as an accomplished fact. Whatever can be obtained beyond this must be looked upon as the result of good fortune and the patient application of preventive treatment combined with the uninterrupted use of curative means.

TREATMENT OF MYELITIS.

Preventive.

Hyperæmia	Aconitine.
Excitability	Cicutine.

Curative.

Dominant.	Acute myelitis		Aconitine, veratrine, digitaline.
	Chronic myelitis		Revulsives, iodoform. Arseniate of soda.
Variant.	Symptomatic	Paraplegia	Hypophosphite of strychnine, phosphoric acid, phosphide of zinc.
		Pain	Morphine, cicutine, croton chloral.
		Fecal retention	Podophyllin, sulphate of strychnine.
		Retention of urine	Catheterism.
		Fecal incontinence	Ergotine. Hypophosphite of strychnine.
		Incontinence of urine	
		Anæsthesia	Electricity.
		Hyperæsthesia	Croton chloral. Tannate of cannabine.
		Visceral perturbations	Hyoscyamine, bromide of camphor.
	Causal	Syphilis	Iodoform, biniodide of mercury.
		Rheumatism	Colchicine, salicylate of soda.

Nephritis.—Inflammations of the kidneys differ as well in respect to their intensity as to the tissues which are first invaded or are most severely affected. The inflammatory element, which is the common basis of all morbid conditions of this character, gives to all a common dominant. Whether the form of nephritis be epithelial, parenchymatous, interstitial, acute, or chronic, the dominant indication will always be satisfied with aconitine. Epithelial (tubal) nephritis, whether idiopathic or deuteropathic, should always receive treatment until one is certain as to its complete resolution. In consequence of a want of energy in the treatment, or the following of an expectant plan of medication, an insignificant degree of inflammation may remain, which is insufficient to reveal the existence of the disease, but is of sufficient importance to serve as a point of departure, perhaps long afterward, for an extension of the disease which may prove incurable. In chronic nephritis or chronic Bright's disease aconitine is equally indicated, not only on account of the renal lesion *per se*, but also on account of the extension of the disease to the entire arterial system. This localization in the circulatory apparatus indicates the combination of aconitine with digitaline. The doses should vary with the condition of the renal function. In epithelial nephritis, in which the difficulties of elimination are not great, aconitine may be combined with digitaline in doses of one granule of each every three or four hours, the results of the treatment being watched with the greatest care that the physiological effect of the drugs employed may not be exceeded. The treatment of interstitial nephritis should be much less active, because the eliminative function in this variety of nephritis is imperfect, and hence accumulation of the medicaments is more likely to occur than in the other forms. Three doses daily will usually be sufficient in this form of the disease. Acute nephritis is always accompanied with a rather high temperature, and this indication of the variant may be satisfied with aconitine, the dosage of which must be regulated by the degree of elevation of the temperature. One granule may be given every half-hour or every hour, the thermometer being frequently used to guard against toxic effects from overdosage. In typhoid fever, which is usually accompanied by infectious nephritis, the ordinary dose is one granule every half-hour or even every quarter-hour, and no danger attends such administration. The markings of the thermometer are infallible guides for regulating the activity of treatment in these cases. Pain in the renal and lumbar regions may be quieted, as in all inflammations, by means of sedatives and antispasmodics. Usually two granules of codeine every quarter-hour, or two of cicutine every half-hour, will suffice to control this symptom. If the urine is scanty and heavy, it may be increased in quantity by the use of the physiological diuretics, water and milk. One to three granules of arbutine every three hours will also be of service for this purpose. In chronic nephritis there are also certain symptoms which, though inconstant, are of sufficient importance when present to demand rapid and immediate treatment. In the greater number of cases the cause of these symptoms is the accumulation of urea in the blood, and they serve as a warning that these products, which are retained in the body on account of defective renal purification, must be eliminated. In the early stages of the disease the intestinal mucous membrane may have a compensatory action for the insufficiency of the kidneys. In this condition a saline laxative, by producing an abundant transudation of serum, will bring the blood into the most favorable condition which is possible. Sedlitz Chanteaud, sulphate of soda, etc., will serve as the most efficient remedies for headache, dyspnœa, and convulsions. In addition to the laxatives, we should give some agent which will act directly upon the affected part, and relieve suffering. Therefore, for the headache we may administer two granules of the valerianate of caffeine every half-hour; for the dyspnœa, two granules of the hydrobromate of cicutine every hour, or one of digitaline every quarter-hour; for the convulsions, two granules of the bromide of camphor or the valerianate of zinc every half-hour, each of these remedies being repeated until the desired effect has been obtained. By these means we may be enabled to overcome the complications, and relieve the sufferings of the patient even in cases in which the laxatives have had no effect. Œdema must be treated with tonics and diuretics; and milk, with three granules each of the arseniate of iron and arseniate of strychnine daily, will give better results than all other means of treatment. Albuminuria calls for no particular treatment; it will disappear with the disappearance of the lesion which caused it. Astringent medication by means of tannic acid, perchloride of iron, etc., will only serve to modify the digestive functions without materially changing the condition of the blood. Uræmia calls for no other treatment than the production of copious serous discharges. Diaphoretics and purgatives will have only a transient effect. Purgatives should always be preferred, because diaphoretics have a much more depressing action upon the vital forces, and thus cause the patient to lose all the beneficial effects of the sweating. Vesicants, cups, and revulsives in general should not be used, for they seldom produce any positive effect, and almost always aggravate the condition of the patient.

NEPHRITIS.

Dominant		Inflammatory condition	Aconitine, digitaline.	
Variant.	Acute	Fever	Aconitine.	
		Pain	Codeine, cicutine.	
		Urine	Milk, water, arbutine.	
	Chronic	Cephalalgia	Valerianate of caffeine.	Sedlitz Chanteaud.
		Dyspnœa	Hydrobromate of cicutine.	
		Convulsions	Bromide of camphor.	
		Œdema	Arseniate of iron. Arseniate of strychnine.	
		Albuminuria	Aconitine, digitaline.	
		Uræmia	Laxatives, diaphoretics.	

Neuralgia.—Neuralgia, or algesia, consists in an exaltation of function of the sensory nerves. It may arise: 1. From a more or less appreciable material alteration in the structure of the nerves. 2. From a dynamic alteration in the nerve-force. 3. From a change in the blood-supply of the nerves, in a quantitative sense. 4. From a qualitative change in the blood-supply, either in consequence of diseases arising from disorders in the blood and diathetic disturbances, or in consequence of toxic influences. The general treatment of hyperalgesia, or neuralgia, consists in the use of anodynes, especially morphine; but the function of this drug is rather to obtund the sensibility with respect to pain than to modify the causative lesions. For this reason, after the sedative effect has passed away, the pain frequently returns with greater violence than before. It becomes necessary, therefore, to make a further search with respect to the pathogenesis of neuralgia, and the manner in which the pain is established, in order to be able to use therapeutic agents with greater effectiveness. The dynamic forms of neuralgia, which are especially prevalent among hysterical and neuropathic subjects, will yield most readily to the physiological modifiers of vitality, such as hydrotherapy, electricity, exercise, diverting employment, and moral influences. As they almost always result from a want of equilibrium in the vital forces, we may add to the foregoing agents a granule of the arseniate of strychnine and one of hyoscyamine three to five times daily. The mobility of these forms of neuralgia teaches us that we may obtain great results by the use of simple means; the difficulty lies in the choice of the means. At one time a neuralgia will yield to the influence of a warm bath; the very next day it may yield to nothing but a cold *douche*. The laws of the correlation of vital forces, as manifested in the facts of dynamogenesis and inhibition, according to the investigations of Brown-Séquard, explain these apparent contradictions. Neuralgias which arise in consequence of lesions in the structure of the nerves are almost always the result of an inflammatory process. In recent cases the most useful curative agent will be found in aconitine, one granule being given every hour, or oftener if the pain is very severe. In chronic neuritis the best results will be obtained with revulsives, linear cauterizations, and, in very obstinate cases, surgical operations upon the nerves, whether neurotomy, neurectomy, or nerve-stretching. Before resorting to surgical procedures, however, we should try the various agents which have a modifying effect upon the nerves in a regular and methodical manner until we are convinced of their ineffectiveness. Congestion of the nerves is as common a cause of neuralgia as anæmia of the nerve-centers. If congestion is the efficient cause, two granules of aconitine should be given three or four times daily; if anæmia, two granules of arsenious acid or the arseniate of iron, combined with an equal quantity of the hydrochlorate of morphine, should be given three to five times daily. Changes in the blood may produce neuralgia, which will be more or less persistent in character. One of the most frequent of the causes of this character is chlorosis. The treatment should be six to ten granules of arsenious acid daily, or a similar quantity of the valerianate of iron. The paludal, syphilitic, and arthritic diatheses are also frequent causes of neuralgia. The treatment should be five to ten granules of the hydrobromate of quinine four times daily, or two to twenty granules of iodoform daily, and two granules of the cyanide of zinc or two of colchicine four times daily. Neuralgia which is caused by any form of intoxication will disappear with the suppression or elimination of the cause, and for this purpose the appropriate means should be used, an enumeration of which is unnecessary. The location of a neuralgia will sometimes indicate a different treatment from that which would be appropriate for one which is differently located, because certain agents have a more positive analgesic effect upon some nerves than upon others. Neuralgia in the plantar region should be treated with applications of the tincture of iodine combined with morphine. Internally three granules of croton chloral may be given every half-hour, or two of cicutine every half-hour until a useful effect has been obtained. Sciatica, when it is idiopathic in character, may be treated with two granules of gelsemine every half-hour, or two of tannate of cannabine. Sciatica, which is a symptom of a myelopathy, is a very rebellious form of neuralgia, and may not be entirely overcome until the principal morbid process has been controlled. Visceralgia in its various forms, which is almost always accompanied by a more or less decided condition of spasm, requires two granules of the hydrochlorate or the hydrobromate of morphine every quarter-hour, with the addition of a granule of the sulphate of atropine every half-hour. Odontalgia may be temporarily relieved by the use of one granule of aconitine every hour, or two of gelsemine every quarter-hour, or two of cocaine dissolved in the mouth, and repeated every fifteen minutes until the pain ceases. If the teeth are much decayed, by pulverizing one or two granules of morphine, and applying the powder to the decayed tooth, the pain will usually be relieved. The internal use of the alkaloids of opium in this condition is not indicated, as they tend only to increase the cranial congestion. Prosopalgia, one of the most painful and most rebellious of neuralgic affections, will almost always yield to the use of two granules of aconitine three to five times daily. The ammoniacal sulphate of copper may also be given with good results, two centigrammes dissolved in water being given five to ten times daily. *Tic douloureux* may be treated with one granule of atropine and one of aconitine every hour until the pain is relieved. The internal treatment may be supplemented by the external use of the ether spray. Hemicrania requires treatment of a particular character, which consists in the use of two granules of guaranine every half-hour during the attack, and three granules four or five times daily in the intervals between the attacks. This treatment must be kept up several months in succession, the doses being gradually diminished, and finally discontinued.

NEURALGIA.

DOMINANT.

With change in the nervous system	Dynamic		Hydrotherapy, electricity. Hyoscyamine, strychnine.
	Inflammatory		Aconitine, surgical means.
With change in the circulation	Congestive		Aconitine.
	Anæmic		Arsenious acid, arseniate of iron. Hydrochlorate of morphine.
With change in the blood	Diathetic	Chlorotic	Valerianate of iron.
		Syphilitic	Iodoform.
		Arthritic	Colchicine, cyanide of zinc.
		Paludal	Hydrobromate of quinine.
	Toxic		Treatment and suppression of the cause.

VARIANT.

Plantar neuralgia	Tincture of iodine, croton chloral, cicutine.
Sciatica	Gelsemine, tannate of cannabine.
Visceralgia	Hydrochlorate of morphine, atropine.
Odontalgia	Gelsemine, aconitine, cocaine.
Prosopalgia	Aconitine, ammoniacal sulphate of copper.
Tic douloureux	Atropine, aconitine.
Hemicrania	Guaranine.

Obliteration of the Arteries of the Brain (*Cerebral Softening*).—Therapeutics has little to do when the vessels of the brain have been obliterated. There are lesions of such a character that we can in no way prevent their production, but we may prevent some of their effects, and for that reason the following observations will be limited to the statement of certain indications respecting the variant in this condition. Arterial thrombosis almost always proceeds from an atheromatous condition of the arteries. The atheromatous process is essentially a chronic one, and can be affected by treatment only to the extent of retarding its progress to a slight degree, the aim of treatment being the quieting and regulating of the general circulation, and the preservation of the normal character of the blood. Two or three granules each of aconitine and digitaline should be given every evening, and in the morning the intestines should be relieved by the aid of a dose of Sedlitz Chanteaud. Obliteration by thrombosis usually occurs gradually; its symptoms, therefore, are also manifested gradually. Consequently, its existence may be suspected and a coercitive plan of treatment adopted accordingly. The case is not the same when the obliteration is caused by embolism, which arises almost exclusively from affections of the heart and large vessels. In this condition the symptomatic phenomena appear suddenly, the patient falling into an apoplectic condition. The first step in the treatment will consist in fortifying the nervous system against the consecutive lesions of function and nutrition, which are due to interruption of the circulation. Hypophosphite of strychnine should be given from the outset, the proper dose being two granules three or four times daily. The congestive symptoms, which are caused by excessive collateral fluxion, should be controlled by the use of one granule of aconitine every hour during the first few days, and two granules three or four times daily at subsequent periods. For the headache, two granules of the valerianate of caffeine may be given every half-hour. Disturbances of the intellect, such as amnesia, hallucinations, etc., may sometimes be modified, especially if they depend upon functional lesions, by the administration of one granule of hyoscyamine combined with one of strychnine every three hours. Paralysis should be treated with two granules of phosphoric acid and two of the arseniate of strychnine three or four times daily. Contractures, if of recent origin, may be made to disappear under the use of one granule of hyoscyamine and two of bromide of camphor four to six times daily. Vomiting, which sometimes accompanies obliteration from embolism, should be treated with two to four granules of codeine, dissolved in water, every half-hour. For vertigo, two granules of caffeine should be given every half-hour, or similar quantities of guaranine.

OBLITERATION OF THE CEREBRAL ARTERIES.

DOMINANT.	Atheromatous arteritis .	Aconitine, digitaline.
	Diseases of the heart . .	Sedlitz Chanteaud.
VARIANT.	Disturbance in the nervous system	Hypophosphite of strychnine.
	Congestion	Aconitine.
	Cephalalgia	Valerianate of caffeine.
	Disturbance of the intellect	Hyoscyamine, strychnine.
	Paralysis	Phosphoric acid, arseniate of strychnine.
	Contractures . . .	Hyoscyamine, bromide of camphor.
	Vomiting	Codeine.

Occlusion of the Intestines.—Intestinal occlusion is due to opposition to the progress of the contents of the intestines, from causes which may reside within the intestinal cavity, in the walls of the intestine, or outside the intestine. Doliger classifies the causes of intestinal occlusion in the following manner:

1. From organic diseases of the intestinal walls .	1. Inflammatory occlusion.	
	2. Cicatricial occlusion.	
	3. Hypertrophic occlusion.	
	4. Valvular occlusion.	
	5. Occlusion from the presence of a polypus.	
	6. Occlusion from cancer.	
2. From a lesion of position of the intestinal walls	1. Invagination.	
	2. Torsion.	
	3. Sudden flexion.	
3. From strangulation .	1. Internal herniæ into the diaphragm, abnormal openings of the mesentery.	
	2. Strangulation of the ileo-cæcal appendix, or some other portion of the intestine.	
	3. Strangulation of a fold of the peritonæum.	
	4. Strangulation of intestine by intestine.	
4. From foreign bodies .	1. Calculi biliary. intestinal.	Internal.
	2. Foreign bodies.	
	3. Intestinal worms.	
	4. Hardened fecal matter.	
	1. Pressure of the kidney, the uterus, or some other organ upon the intestine.	External.
	2. Pressure upon the intestine by an abdominal tumor.	

All these causes may give rise to occlusion of different degrees of intensity, its three types being recognized as invagination, contraction, and strangulation. The symptoms of these three types are different, and must be borne in mind in order to establish the diagnosis with exactness, upon which the efficiency of the treatment very often depends. Evidences of invagination are vomiting of bile, and sometimes of fæces; there is seldom complete inability to evacuate the intestines, and the discharges are of a diarrhœal, fetid, and sanguinolent character. Tenesmus and contractions of the anus are sometimes very troublesome; the abdomen is retracted at first, and afterward slightly tympanitic; the abdominal tumor is cylindrical, double, and tends to project during the periods of colic rather than in the intervals of repose. In making a diagnosis of strangulation, it is important to be acquainted with the antecedent conditions. These may have consisted in diseases of the intestine, a cachectic condition, frequent attacks of diarrhœa alternating with constipation, and an abdomen which is constantly dilated; vomiting and tympanites are also symptoms which must be taken into consideration. True strangulation is characterized by precedent peritoneal inflammation, with subsequent intense pain, obstinate vomiting, constipation, occasional discharges of blood from the anus, and absence of tumor. Such are the differential symptoms given by Besnier, and, though they have no absolute value, they may serve to fix the diagnosis in the majority of cases. The relative frequency of the different forms of strangulation, as given by statisticians, may also be of assistance in making a differential diagnosis. Brinton, in an analysis of six hundred cases of occlusion, found that invagination was present in forty-nine per cent, and torsion or volvulus in only eight per cent. The most reliable signs of this condition are those which are derived from the progress of the accidents, from the precedent circumstances, and the age of the patient.

With the possession of all these facts the diagnosis is seldom anything but a probability. The diagnosis of the seat of the obstruction is of less importance for treatment by means of drugs than it is for surgical intervention. In all cases a digital exploration of the rectum should be made, for this will not infrequently reveal to us the cause of the accident, and the curative indication as well. Whatever be the pathogenic variety of the occlusion, the principal lesion is always the same, and the dominant indications almost identical in all. Occlusion may be attributed to two causes—a dynamic or an organic one. Dynamic occlusion, which results from spasmodic constriction of the intestine or from arrest of the contents of the intestine in consequence of intestinal paralysis and continued accumulation, may easily be overcome in the first instance by hyoscyamine, and in the second by strychnine. As the two elements of spasm and paralysis are almost always associated, however, these two remedies may be given simultaneously, the effect obtained being more certain, more mild, and more constant than when they are given separately. They are also better tolerated, and may be continued until a therapeutic effect is obtained, unless the obtaining of a physiological or toxic effect should compel their suspension. Likewise, in strangulation from organic causes excellent results may be obtained from these two alkaloids, and their administration should be begun in one-granule doses every quarter-hour, and continued until the intra-intestinal circulation is re-established, and the pains cease, or until the extreme dilatation of the pupils and the beginning of delirium admonish us that their use must be discontinued. Let us suppose, for example, an occlusion from strangulation which is due to cancerous disease of the intestine. In most cases the obstruction can be overcome for the first few times, and the fecal matter discharged. In such a condition the obstruction is evidently not due altogether to the organic stricture, otherwise the difficulties of the situation would not have been overcome by the means used. The caliber of the intestine is made narrower by the organic disease, and yet narrower if there is the slightest spasm, or an accumulation of fecal matter, as the result of insufficient contractile force. The same treatment which was used in dynamic occlusion is, therefore, appropriate in this condition, and will be crowned with the same results as if the lesion were purely vital. Unfortunately, the time comes when the strangulation becomes entirely organic, and no pharmaceutical means have yet been discovered for overcoming this variety of strangulation. A bad prognosis must, therefore, be given in those cases of occlusion which resist such a plan of treatment as has been indicated. Nothing but immediate surgical intervention can now be of service in saving the patient. The accompanying enteralgia should be treated with morphine, however. This will not only increase the intestinal contractility, but it will greatly aid the effect of the antispasmodics which may have been administered—an effect which is much more difficult to obtain when violent pain is constantly exciting muscular irritability. Three granules of the hydrochlorate or the hydrobromate of morphine may be given every ten minutes until the patient is relieved. No particular treatment can be suggested for fecal vomiting, and, when this condition exists, it is desirable that the alkaloids which have been recommended be given in iced water, or subcutaneously in solution, to prevent their rejection. After the pain has ceased, it will be proper to add to each dose of hyoscyamine and strychnine three to five granules of podophyllin, which will be slow in its action, but will prove to be a benefit rather than an injury. The purgative effect will be aided by the use of occasional draughts of a solution of Sedlitz Chanteaud. Meteorism will disappear only with an improvement in respect to the occlusion; but, as it is the cause of secondary disturbances, such as hiccough and dyspnœa, it should be combated with local means, the best of which is ice, which should be kept constantly upon the abdomen. Punctures of the intestines are rarely indicated, not only on account of their danger, but because they are usually ineffective. Rectal enemata for the purpose of exciting contractility, or exerting a counter-pressure to that of the obstruction, are sometimes useful, and are not accompanied with danger. In preference, however, fifty grammes of Sedlitz in solution may be given, or a quantity of carbonated water may be injected by means of an œsophageal catheter. Enemata of tobacco are very dangerous, and so are such heroic measures as the use of metallic mercury in quantity, croton-oil, etc.

INTESTINAL OCCLUSION.	DOMINANT.	Spasm	Hyoscyamine, sulphate of atropine.
		Paralysis	Strychnine.
		Organic lesions	Surgical treatment.
	VARIANT.	Enteralgia	Morphine.
		Vomiting	Ice.
		Fecal retention	Podophyllin.
		Meteorism	Ice.

Œdema of the Glottis (*Laryngeal Infiltration*).—Laryngeal infiltration and œdema of the glottis can not be entirely identical conditions, because the larynx is not the glottis, and all infiltrations are not serous in character. Clinically, however, these infiltrations must be considered together, because the symptoms are the same, and there is little difference in the treatment. Submucous inflammation of the larynx, chondritis, perichondritis, etc., give rise to sero-purulent exudations, which cause engorgements in different parts of the larynx, and produce symptoms which are identical with those which are caused by serous engorgement accompanying general disease, or diseases of parts contiguous to the affected larynx. While it may be possible to treat sero-purulent infiltration with two granules of iodoform and two of arseniate of soda three or four times daily, and with revulsives and topical applications, the same is not true of serous infiltration, which is almost always caused by severe general diseases, which must be cured before the œdema will disappear. The pain is sometimes very severe, and may offer an obstacle to deglutition. This pain may be relieved by the use of two granules of Gregory's salt, cocaine, and hydrobromate of morphine every quarter of an hour until relief is obtained. The cough is not usually of great significance, but in cases in which it is very troublesome it may be soothed with two granules of Gregory's salt or two of the hydrobromate of morphine every quarter of an hour. The dyspnœa indicates revulsives and topical applications, and it may also be modified by the use of one granule of atropine with two of sulphate of strychnine every half-hour. When the dyspnœa becomes sufficiently urgent to threaten life, tracheotomy must be performed as a last resort.

LARYNGEAL INFILTRATION.	DOMINANT.	Sero-purulent infiltration .	Iodoform, arseniate of soda, revulsives.
		Dropsical infiltration . .	Treatment of the cause.
	VARIANT.	Pain	Cocaine, morphine.
		Cough	Gregory's salt.
		Dyspnœa	Atropine.
		Asphyxia	Tracheotomy.

Œdema of the Lungs.—See Pulmonary Congestion.

Œsophagismus.—Spasm of the œsophagus, or œsophagismus, is a dynamic affection, whether it be idiopathic or caused by lesions of distant parts, for example, uterine diseases, intestinal parasites, etc. The essential perturbation consists in an exaggerated contractility of the œsophagus, which may occur after the slightest irritation. The dominant indication consists, therefore, in hyoscyamine, atropine, or daturine, combined with the sulphate of strychnine, for the reason that there can be no spasm without paralysis. The antispasmodic alkaloids should be given every half-hour, in acute and recent cases, until the spasm is overcome. In chronic cases we should give only one granule of one of the mydriatics, with two of the hypophosphite or the sulphate of strychnine, four times daily. This condition, in the form of spasmodic dysphagia, is frequently a phenomenon of hysteria or some other of the different varieties of so-called nervousness. In the intervals between the attacks such cases should be treated with three granules of the bromide of camphor three times daily and cold baths. This form of spasm is not infrequently attributed to entozoa, and especially to tænia. In such cases the treatment would consist in the removal of the cause by the use of ten granules of santonine twice daily, or twenty to thirty centigrammes of pelletierine at one dose. Should the condition persist, in spite of these vermifuges, antispasmodic treatment should be adopted, the same as if the dysphagia were essential and not symptomatic. Insufficient alimentation will result in more or less decided anæmia from inanition. Such a result may be avoided by the use of the œsophageal catheter, which will not only be a medium for furnishing food, but will allay the spasm as well. Enemata of suitable peptones may also be used. If anæmia is actually present, it may be treated with two to three granules of the valerianate of iron at each meal. Hygienic measures directed to the moral nature, and regular exercise are indispensable auxiliaries in treatment.

ŒSOPHAGISMUS.	DOMINANT.	Spasm . .	Atropine, strychnine.
	VARIANT.	Hysteria . . Nervousness .	Bromide of camphor. Hydrotherapy.
		Entozoa . .	Santonine, tannate of pelletierine.
		Anæmia . .	Salts of iron, artificial alimentation.

Œsophagitis.—Inflammation of the œsophageal mucous membrane may be acute or chronic. If acute, it may be primary or secondary. Primary œsophagitis is usually due to the irritant action of foreign bodies, poisonous substances, and too hot or too cold food. Secondary œsophagitis is due to the extension of an inflammation in neighboring organs, whether the pharynx, larynx, or stomach, or to the localization of an infectious disease, such as variola. Chronic œsophagitis results from the continuation of an acute œsophagitis, or from a venous stasis which is caused by lesions of the circulatory apparatus. The fundamental morbid elements are consequently inflammatory, atonic, or infectious, and are therefore to be treated with aconitine, strychnine, or the sulphide of calcium. The frequency of the doses will depend upon the severity of the disease; one granule may be given every two hours or every half-hour. Dysphagia, which varies in different cases in accordance with individual susceptibility, the number of the existing lesions, and the severity of the ulcerations which may be present, depends more upon the sensibility of the mucous membrane to irritation, which is determined by antiperistaltic movements of contraction causing regurgitation of the contents of the alimentary canal, than upon contraction of the caliber of the œsophagus. The indication is, therefore, to use antispasmodics, say one granule of hyoscyamine or sulphate of atropine every half-hour, in order to allow liquid food, either soup or milk, to pass without regurgitation. It is better to dissolve the granules in warm water, or in some mucilaginous substance if they contain an irritating substance, veratrine, for example. The pain which is also an obstacle to deglutition may be relieved by the use of two granules of the hydrobromate of morphine every quarter of an hour. The fever which accompanies the severer forms may be moderated by using one granule of aconitine every hour, and, if there are perceptible remissions or intermissions, three granules of the hydrobromate of quinine may be given each hour during the intermission. The suppuration in the phlegmonous form of œsophagitis calls for the combined use of two granules of the arseniate of quinine and two of iodoform four times daily. For hæmorrhages, three granules of ergotine dissolved in water may be given every quarter-hour, or two of tannic acid at the same intervals. When the ulcerations begin to cicatrize, the formation of definite organic lesions is to be feared. This unfortunate result may be obviated to a certain degree by the use of two granules of iodoform and two of arseniate of soda three times daily. The diet should consist of liquids, especially of lukewarm milk. In some cases rectal alimentation will be required, enemata of peptones being indicated.

ŒSOPHAGITIS.	DOMINANT.	Primary	Inflammatory element . . .	Aconitine.
		Secondary	From extension of an inflammation	Aconitine.
			From infection .	Sulphide of calcium.
			From venous stasis	Digitaline, strychnine.
	VARIANT.	Dysphagia		Hyoscyamine.
		Pain		Hydrobromate of morphine.
		Fever		Aconitine.
		Suppuration		Iodoform, arseniate of quinine.
		Hæmorrhage		Ergotine.
		Sequelæ		Iodoform, arseniate of soda.

Orchitis.—Orchitis is almost always caused by direct irritation or by transmission by continuity of tissues. Acute orchitis is usually recovered from spontaneously in seven to fifteen days, unless injurious treatment is resorted to, or there is a want of care and attention to hygienic rules which are indispensable. In spite of the frequent resolution of acute inflammation of the testicle, however, it sometimes passes into the chronic state, its cure thus becoming a more laborious process, and at others it may terminate by suppuration, gangrene, or degeneration. But, even apart from such unfavorable terminations as those which were last mentioned, the disease is sufficiently severe and the time sufficiently long in which patients must lie in bed to prevent relapses, that one should seek to abridge it as much as possible, by the means which may be furnished by dosimetry. The aim should be, therefore, not only to diminish the duration of the disease, but also the probabilities of a less favorable termination than resolution. In acute orchitis we should combat the inflammatory element with aconitine from the beginning. The treatment should be the more active as the disease trenches the more upon the general condition. If there is fever with a strong, hard, and accelerated pulse, a granule of digitaline should be added to the aconitine, each being given every half-hour until a defervescent condition is established. If there is no febrile reaction, two granules of aconitine may be given four times daily, as an anticongestive. The pains, which are due largely to the unyielding character of the inflamed tissues, may be relieved with one granule of cicutine every hour, and if the pain has a spasmodic character a granule of hyoscyamine may be given every two hours with satisfactory results. The nausea and vomiting which sometimes accompany the first stage of the disease should be treated with one granule of hyoscyamine and three of the hydrochlorate of morphine every hour until relief is obtained. In the subacute and chronic conditions, two granules of the sulphate of strychnine should be given four times daily to hasten the process of resolution. The local application of compresses saturated with cold water, in addition to the internal treatment, will have an excellent antiphlogistic and tonic effect. The daily use of Sedlitz Chanteaud is indispensable to prevent the bad effect which may be produced by constipation or hæmorrhoidal congestion. Suppuration calls for surgical interference, but one should not overlook the advantages which may also be obtained by the use of two granules of iodoform combined with two of the arseniate of iron, of soda, or of quinine, three or four times daily. Surgical attendance will also be required if a case terminates in gangrene, and in addition one may give two granules of the salicylate of ammonia and two of salicylic acid four times daily.

ORCHITIS.	DOMINANT.	Inflammatory element.	Aconitine.
	VARIANT.	Pain	Cicutine.
		Spasm	Hyoscyamine.
		Nausea, vomiting	Morphine, hyoscyamine.
		Suppuration	Iodoform, arseniate of quinine.
		Gangrene	Salicylate of ammonia. Salicylic acid.

Osteocopic Pains.—See Syphilis.

Ovaritis.—Simple acute inflammation of the ovary has the same dominant which other diseases have which are characterized by this morbid process. Aconitine, in doses as frequent as the severity of the case demands, will therefore form the basis of treatment. Should ovaritis appear suddenly and inexplicably, especially in women who also present the phenomena of rheumatism, a granule of colchicine should be combined with one of aconitine, and be given every half-hour, or less frequently if the fever does not exceed 38·5° C. The symptoms of ovaritis are almost always the same as those of metritis, and can only be differentiated from them by localization of the pain, which should be limited to one of the iliac regions in ovaritis, but may occupy the entire hypogastrium in metritis. These pains should be promptly relieved by using three granules of the hydrochlorate of morphine and one of hyoscyamine every half-hour. For the fever we should give aconitine, adding hydroferrocyanate of quinine if there are intermissions in the case. Nausea and vomiting will not only fatigue the patient, but will aggravate the abdominal trouble, and interfere with the regularity of the treatment. They may be treated with three granules of codeine every ten minutes. Sedlitz Chanteaud should be used freely as an ordinary beverage, a soupspoonful being given in a glass of sweetened water which may be flavored with lemon or orange peel. Ovaritis which occurs during menstruation, and is especially apt to be associated with dysmenorrhœa, is sometimes accompanied with severe hæmorrhages. In such cases the treatment with aconitine should be supplemented by the hæmostatic action of ergotine, three granules being given every quarter-hour. Contractions of the rectum and bladder will require the use of daturine in one-granule doses every half-hour. Should the ovary suppurate, two granules of iodoform with two of the arseniate of quinine should be given five times daily. If the ovaritis is not checked, it sometimes passes into the chronic condition, for which the dominant is ergotine in two-granule doses four times daily. The secondary indications will vary greatly, according as there is simple inflammation or the development of cysts, and according to their volume, their position, their adhesions, etc. The most frequent indications are those which are here detailed. For constipation, which is almost always present, we should give three to five granules of podophyllin every evening, and in the morning half a spoonful of Sedlitz Chanteaud. The podophyllin may be alternated from day to day with veratrine in doses of three to five granules, or leptandrine, ten granules. To overcome the vesical tenesmus, daturine may be alternated with gelsemine. Enemata of very hot water (40° to 45° C.) will usually be found very useful for this cause of dysuria. The dyspnœa may be relieved by the use of two granules of cicutine four times daily, or two of digitaline every three hours, until the pulse shows that a decided effect has been produced. Dyspepsia will require three granules of quassine before each meal, and three of pepsin after each. Should œdema be manifest, it will almost always be due to compression upon the veins by the enlarged or enlarging cyst, and should be treated with strychnine and digitaline, that the heart may have additional force to overcome the obstacles which oppose themselves to its propulsive energy. The more voluminous cysts require ovariotomy, which becomes a necessity when the diagnosis is no longer doubtful. Every moment lost after that step has been reached tends to diminish the chances of success from the operation. As the cyst enlarges, the chances of success become more precarious on account of the injuries which result to the abdominal viscera from its presence. The author has seen atrophy of the large intestine to such a degree that it presented no more than a fifth of its normal volume, this result being due to the pressure of a large ovarian cyst. When the lesions can be remedied by operative means alone, all delay is harmful, and sometimes even irreparable.

OVARITIS.

ACUTE.

DOMINANT.	Simple	Aconitine.
	Rheumatic	Aconitine, hyoscyamine.
VARIANT.	Pain	Morphine.
	Fever	Aconitine, hydroferrocyanate of quinine.
	Nausea and vomiting	Codeine.
	Constipation	Sedlitz Chanteaud.
	Metrorrhagia	Ergotine.
	Tenesmus	Hyoscyamine.
	Suppuration	Iodoform, arseniate of quinine.

CHRONIC.

DOMINANT.	Hypertrophy	Ergotine.
VARIANT.	Constipation	Podophyllin, leptandrine, veratrine.
	Vesical tenesmus	Daturine.
	Dyspnœa	Cicutine.
	Dyspepsia	Quassine, pepsin.
	Œdema	Strychnine, digitaline.
	Enlarged cyst	Ovariotomy.

Ozæna.—See Rhinitis.

Palpitations of the Heart.—See Hyperkinesis.

Pancreatitis.—The diseases of the pancreas, which as yet have not been thoroughly investigated, are almost always consecutive to other morbid conditions, and rarely require particular treatment. The symptoms which are suggestive of pancreatitis are pain of a more or less constant character in the region of the umbilicus and the epigastrium, which should be treated with three granules of codeine or morphine three times daily; liquid stools which look like saliva, which would probably be modified by the use of one granule of atropine every two or three hours; and dyspepsia, especially after the use of hydrocarbonaceous food, for which three granules of diastase may be given after each meal.

PANCREATITIS.

DOMINANT		Treatment of the primary disease.
VARIANT.	Pain	Codeine, morphine.
	Serous diarrhœa	Atropine.
	Dyspepsia	Diastase.

Parotitis (*Parotiditis*).—Inflammation of the parotid glands may be idiopathic or a complication in many of the infectious diseases, and in the latter case appears to be caused by elimination of the deleterious products formed by the virulent agents. When it is idiopathic it is not usually a condition of grave importance. The predominant symptoms are those of any other condition of fluxion, the volume of the inflammatory products being governed by the intensity of the process of serous transudation. One granule of aconitine, combined if necessary with one of the sulphate of strychnine, every two hours, or more frequently if fever is present, will quickly relieve the difficulty in the circulation. Parotiditis which follows infection of the organism requires the sulphide of calcium if the disease appears in the first stage of the infection, or the nitrate of pilocarpine if it occurs during the period of elimination. The dose of each should be two granules every hour. The pain is not intense in all cases. In those cases in which it is intense, two granules of the tannate of cannabine may be given every hour, or one of hyoscyamine every two hours. The disordered condition of the digestive function should be treated with appropriate doses of Sedlitz Chanteaud. Dyspnœa and delirium, which are usually caused by compression of the vessels of the parotid glands, indicate disgorgement by means of leeches, or the use of two granules of colchicine every two hours until purgation results. The suppuration may be diminished by the use of two granules of iodoform and two of the arseniate of quinine four times daily. The accumulations of serum which take place in other organs may be treated with five granules of the nitrate of pilocarpine every quarter-hour, or two of colchicine every hour.

PAROTIDITIS.	DOMINANT.	Inflammatory element	Aconitine.
		Infectious element	Sulphide of calcium.
	VARIANT.	Fever	Aconitine.
		Pain	Tannate of cannabine.
		Gastric disorders	Sedlitz Chanteaud.
		Dyspnœa	Colchicine.
		Delirium	Leeches.
		Suppuration	Iodoform, arseniate of quinine.
		Serous fluxion	Nitrate of pilocarpine.

Pericarditis and Endocarditis. — Pericarditis may be primary or secondary. The former is much the rarer, and yet may be the more easily recognized from the beginning; the course of the latter is insidious for a longer or shorter period of time, and, when at length the condition is evident from the subjective symptoms, it is too late to completely repair the damage which has been done. Hence, the evident duty of the physician is to seek carefully for inflammation of the pericardium in all cases in which it is likely to be present, and to be always on his guard for its appearance. The inflammatory element of the disease in its acute form should be met with aconitine; and the more recent the disease, and the more pronounced its symptoms of excitation, the more active should the treatment be. In the chronic form of the disease aconitine should not be used, especially if the contractile force of the heart is diminished. In such a case the inflammatory element is supplanted by the paralytic, and aconitine should therefore be replaced by two granules of the arseniate or the hypophosphite of strychnine four to six times daily. With respect to the variant, the fever must be vigorously met by the use of digitaline combined with aconitine and strychnine, one granule of each being given every half-hour or less frequently, according to the condition of the pulse and the elevation of the temperature. The combination of defervescents in the treatment of acute diseases of the heart should be managed with great prudence. The effect which is obtained will not be the total effect of the synergic agents, but there will be as many effects as there are agents employed. These agents must, therefore, be so administered as to exercise a regulating action upon each one of the organs or systems upon which this action is particularly directed. Thus the quality and the number of the pulsations must govern the administration of digitaline, the temperature must govern the use of aconitine, the contractility that of strychnine; consequently the three defervescents must not be associated imprudently, and they must be given only as each has its particular indication. This advice, which is important in all antiphlogistic treatment by means of defervescents, is of particular importance in the treatment of acute diseases of the heart. If the thoracic pain is severe, it may be relieved by the use of two granules of cicutine every half-hour. Should the pulse become vibratile and very full, the cardiac excitability may be diminished by the use of two granules of digitaline three or four times daily; the danger of a corresponding depression after this treatment must be borne in mind. If the pulse is very feeble, sulphate of strychnine is urgently indicated, or caffeine, two granules of either being given every half-hour. Dysphagia, which is an important sign, not only as an indicator of the presence of the disease, but also as an evidence of spasmodic irritation of the vagus, should be treated with one granule of hyoscyamine every two hours. Insomnia, which will quickly reduce the strength and contribute to cardiac ataxia, should be treated with three granules of the hydrobromate of morphine every quarter of an hour, or similar doses of croton chloral. Dyspnœa may come from several causes, but is almost always due to more or less pronounced systolic weakness, and should be treated with two granules of apomorphine and two of caffeine every half-hour. Excellent results may also be obtained from the use of digitaline with the other remedies. Hiccough, which is very annoying, and which also interferes with the regularity of the circulation, should be treated with one granule of atropine every hour. Instead of the alkaloid atropine, one of its salts may be used. Dropsy of the limbs and of the viscera requires, above all things, the heart-tonics digitaline, caffeine, and strychnine, and diuretics scillitine and Sedlitz Chanteaud. Two to three granules of the scillitine may be given three times daily, and of the Sedlitz a small spoonful in the morning. Simple endocarditis requires the same treatment as pericarditis. The principal indications and means of treatment are common to the two diseases. In chronic endocarditis, however, the nutrition of the heart should be modified by the use of two granules of the arseniate of soda and two of the arseniate of antimony three times daily. Infectious endocarditis is extremely dangerous, and a tonic treatment alone is appropriate. Two granules of salicylate of ammonia and two of iodoform, combined with two of arseniate of strychnine every hour, may be given with suitable defervescents if the temperature is elevated. In spite of the most judicious treatment patients with this disease rarely recover.

PERICARDITIS.	DOMINANT.	Inflammatory element	Aconitine, arseniate of strychnine.
	VARIANT.	Fever	Digitaline.
		Thoracic pain	Cicutine.
		Fullness of pulse	Digitaline.
		Weakness of pulse	Sulphate of strychnine. Caffeine.
		Dysphagia	Hyoscyamine.
		Insomnia	Hydrobromate of morphine.
		Dyspnœa	Apomorphine, caffeine.
		Hiccough	Atropine.
		Dropsy	Caffeine, digitaline, strychnine. Sedlitz Chanteaud, scillitine.
		Adynamia	Salicylate of ammonia. Iodoform, arseniate of strychnine.
		Hyperplasia	Arseniates of soda and antimony.

Peritonitis.—Peritonitis may occur as a simple inflammatory process, as an accompaniment of general or local infection, and as a consequence of such dyscrasias as the tuberculous, the cancerous, as an accompaniment of Bright's disease, etc. The dominant will vary with the determining causes; if the disease is a simple inflammation, aconitine will be required; if due to infection or the dyscrasias, it will require the treatment of the disease which is the exciting cause. Primary peritonitis manifests itself in a positive and unmistakable manner. The patient is seized with violent chills, with intense fever, and with severe pain in the abdomen. At the commencement of the chill one should give one granule of the sulphate of strychnine and one of phosphoric acid every quarter of an hour until reaction occurs. After reaction has been established the fever will be high, and there must be rapid interference in order to check it; we should therefore give one granule each of the defervescents aconitine, digitaline, and veratrine every quarter of an hour, and two of the hydroferrocyanate of quinine every half-hour, adding every hour one granule of strychnine to overcome the vasomotor paralysis. The pain is always extremely severe, and this is a symptomatic indication which must never be neglected, for it not only tends to aggravate the inflammatory condition, but also to deprive the patient of the strength which is so necessary to enable him to undergo the difficulties which threaten him. The abdominal pain, therefore, should be treated with two granules each of the tannate of cannabine and two of the hydrobromate or the hydrochlorate of morphine every quarter-hour. Meteorism, which is caused by the distention of the paralyzed intestine with gas which has been generated therein, should be treated with two granules of ergotine every half-hour, or with larger doses of strychnine. Constipation is also a result of intestinal paralysis; or there may be diarrhœa, as a result not only of atony of the sphincter, but of hypersecretion from the irritation resulting from fluxion pertaining to the mucous membrane. Both constipation and meteorism should be treated with Sedlitz Chanteaud and strychnine given simultaneously. If diarrhœa is present, there is no need of taking active steps to check it until the disease itself is checked, unless there is evidence that the patient is being exhausted by it, in which case the doses of morphine must be sufficient to check hypersecretion. Vomiting, which is a reflex effect produced by irritation of the nerves in the region which is involved, may be controlled by the use of two granules of morphine and one each of hyoscyamine and strychnine every half-hour. Hiccough, which is due to irritation of the diaphragm, the influence being transmitted from the inflamed peritonæum which covers the lower surface of that muscle, may be arrested by the use of one granule of hyoscyamine every half-hour. Such a result is obtained with the greater difficulty in cases in which the increase of abdominal pressure embarrasses the respiration and the circulation. The principal indication is to produce a tonic action upon the vagus nerve, which presides over the principal thoracico-abdominal functions, and this may be best effected by using two granules of strychnine every half-hour. The strychnine will have the additional advantage of opposing paralysis of the diaphragm, which may be excited by inflammation of its serous membrane. Chronic peritonitis, which is usually of a tuberculous character, should be treated with vesicants locally, and the persistent use of iodoform, the arseniates of iron and of soda, or the arseniate of quinine. Two granules of each should be given three to five times daily. The disease becomes more severe with each succeeding attack. During the acute phase of the attack, defervescent agents should be actively used, but only with the view of retarding the progress of the disease, which must inevitably have a fatal issue.

PERITONITIS.	DOMINANT.	Inflammatory element	Aconitine.
		Dyscrasic and infectious elements	Treatment of the primary disease.
	VARIANT.	Chills	Sulphate of strychnine, phosphoric acid.
		Fever	Aconitine, digitaline, veratrine. Hydroferrocyanate of quinine. Sulphate of strychnine.
		Pain	Hydrobromate of morphine. Tannate of cannabine.
		Meteorism	Ergotine, sulphate of strychnine.
		Constipation	Sedlitz Chanteaud.
		Diarrhœa	Hydrochlorate of morphine.
		Vomiting	Hydrochlorate of morphine. Hyoscyamine, sulphate of strychnine.
		Hiccough	Hyoscyamine.
		Cardio-pulmonary complications	Arseniate of strychnine.
Chronic peritonitis			Iodoform, arseniates, revulsives.

Phthisis.—See Tuberculous Disease.

Plethora.—If the sanguine disposition is becoming less and less common both in the city and in the country, the plethoric condition is becoming still less common. Plethora is in reality only an exaggeration of the sanguine temperament. Just as the nervous diathesis is only an exaggeration of the nervous temperament, and the lymphatic diathesis an exaggeration of the lymphatic temperament, so plethora is an advanced stage of the sanguine temperament. It can not be said that it is a true morbid state, nor yet that it is an excessive degree of health, but it is a condition of health in which disease may be said to be imminent. An extremely plastic condition of the blood, its richness in red globules—conditions which are disproportionate to the wants of organic nutrition—these constitute plethora. The manifest indications are to increase the conditions of elimination and diminish the ingestion of assimilable material. Aside from the proper modifications as to regimen and exercise, the refreshing influence of Sedlitz Chanteaud should be obtained, and the work of the circulation should be modified by the influence of two granules of aconitine and two of digitaline morning and evening. When there is a tendency to congestion of the head, which is indicated by somnolence, injection of the conjunctivæ, redness of the face, rumbling in the ears, etc., a granule of the citrate of caffeine should be given every half-hour, and one or two doses of aconitine and digitaline. The disposition to hyperæmia of the lungs, which is manifested by oppression in breathing, palpitations, etc., may be treated with two granules each of aconitine, veratrine, and digitaline three times daily. After hyperæmia is established, a few leeches may be used upon the affected parts, after which anticongestive means may be used until the pulse is softer in character, and the danger of congestion in the more important viscera is past.

PLETHORA.

DOMINANT		Suitable diet, Sedlitz Chanteaud, aconitine.
VARIANT.	Cephalic hyperæmia	Citrate of caffeine.
	Thoracic hyperæmia	Digitaline, veratrine.

Pleuritis.—Pleuritis may proceed either from external or internal causes. Pleuritis of internal origin may proceed from a general disease, such as rheumatism, albuminuria, the eruptive fevers, and infectious diseases, from lesions of tissues contiguous to the pleura, the inflammatory process extending to the latter, or from injury to the latter from the development of morbid products. Pleuritis of external origin may result from traumatism or from the effect of cold, with or without the suppression of the perspiration. The disease may be acute or chronic. The latter variety may have the characteristics of a chronic disease from the beginning, or it may follow the acute form. Inflammation of the pleura, with reference to the quantity and nature of its exudates, may be considered clinically under two forms—the proliferative, or dry, and the exudative, or effusive. The first may be considered an abortive form of the second. From proliferative pleuritis to purulent pleuritis there is a series of morbid transformations which succeed each other in natural order, and are like the successive steps in a plan which is in process of evolution. As the last of these steps is one which indicates a great degree of gravity, we should spare no efforts to break the series and check the disease at the beginning, so as to avoid the consequences, as grave as they must be, which are likely to follow when an expectant plan of treatment is carried out. In the first phase of the disease, whatever be its primary form, we should not lose an instant in endeavoring to accomplish its control. Statistics show that pleuritis is fatal in a larger percentage of cases than it used to be, and this can be accounted for only by the injurious effects of the expectant plan of treatment. The physicians of the dosimetric school in its earlier periods, notwithstanding the imperfection of their methods for checking this disease, had better success, and their results were more satisfactory than those which were obtained by the followers of actual science. The latter were armed with means for treating the disease during its last period, but were unable to do anything when the disease was still without threatening features, when the lesions were such that they could be repaired, and when a restoration from a pathological to a physiological condition could easily be accomplished. Therapeutics should always aim to be preventive, and not be limited merely to the prevention of death, but, on the contrary, it should prevent the phenomena which lead to it. When a patient with pleuritis summons a physician in the earliest stages of his disease, and, notwithstanding, presents the symptoms of purulent pleuritis after a certain length of time, it can be almost affirmed that his unfortunate condition is due to the negligence of his physician. If the physician will use defervescent agents in a methodical manner, he will not be compelled to resort to trocars and aspirators, and it should always be his aim to avoid the latter means. The statistics of actual science ought not to be somber; it should not boast of its progress while compelled to blush at its clinical results. The dominant in acute dry pleuritis is that which is common to all inflammatory affections. But in this case aconitine must not only be used as a febrifuge; it must also be used as an anticongestive. The elements of inflammation must be attacked vigorously—congestion with aconitine and digitaline, vasomotor paralysis with strychnine—and this treatment must be continued not only until the fever has ceased, but as long as the organism will tolerate it. One granule of each may be given every fifteen minutes, or at longer intervals if such is the indication. Vesicants and bloodletting are absolutely contra-indicated, the former because they increase the existing pain and add an inflammation to one which is already present, the latter because it weakens the patient too much and leaves him in a bad condition for undergoing the resorption of the exudates which have already been formed. Bloodletting is useful only at the time of invasion of the inflammatory state, but one is seldom called to see a patient at that time. On the other hand, leeches and wet cups may be very serviceable in making the internal antiphlogistic treatment more effective. Pleuritic pain, or costalgia, should be promptly treated with hypodermic injections of the hydrochlorate of morphine, or by the application of leeches. Internally, we may combine with the defervescent agents one or two granules of cicutine, or its hydrobromate, every half-hour until the pain is relieved. It must not be forgotten that pain is both a cause and an effect of inflammation. Dyspnœa may follow violent pain and fever, and if these two elements are brought under control the dyspnœa will cease with its causes. If special treatment for it were indicated, we should give aspidosamine or picrotoxine. In chronic proliferative pleuritis, chronic anticongestive means of treatment must be employed, two granules of aconitine and two of arseniate of strychnine being used three times daily. This form usually results from some complicating element, and we may be compelled not infrequently to give two granules of the arseniate of iron and two of iodoform three or four times daily as modifiers of the newly formed tissues which result from the disease. Revulsives upon the skin are also appropriate for this condition—for example, tincture of iodine, iodized cotton, and the actual cautery, their action upon the vital forces being both a general and a local one. The thoracic pains which frequently accompany this form of the disease may be relieved with two granules of cicutine three or four times daily. At the end of the proliferative period we find an effusion in the form of a fibro-serous exudate. The exudative period is not of long duration, because the pleura rapidly absorbs the material which is deposited upon its surface. If absorption does not go on rapidly, the exuding process being more intense than the absorptive one, or if absorption is interrupted by the formation of false membranes which are interposed between the absorbing vessels and the exuded material, the volume of the latter may become quite large. In the former case, the pleuritis remains acute, the dominant being the same as in dry pleurisy. The fever frequently assumes an intermittent type, and one of the salts of quinine becomes indispensable. Either the hydroferrocyanate, the hydrobromate, or the sulphate may be given in three-granule doses every three hours. The cough, which tends to increase the inflammation, should be treated perseveringly with two granules of the hydrobromate of morphine every twenty minutes; or three-granule doses of codeine, Gregory's salt, or narceine may be given at the same intervals. Dyspnœa may result partly from fever and partly from compression. In the latter case, the indication is to exert a tonic action upon the lungs, that they may be the better enabled to accomplish their function and resist the pressure which is caused by the effusion.

Agents for accomplishing this purpose are apomorphine, hypophosphite of strychnine, and brucine, one to three granules being given every two hours. The exudate in chronic pleuritis may be fibro-serous, or it may be purulent. If the effusion is serous, absorption may be prevented by an atonic condition of the vessels of the pleura. The circulation of the respiratory apparatus should therefore be modified with picrotoxine, and the pneumogastric be incited to action by strychnine and apomorphine. Strychnine may be given in two- or three-granule doses every two hours until the face is somewhat congested. Apomorphine may be given in two-granule doses, with like quantities of caffeine, arbutine, and adonidine, four to six times daily, for their tonic and diuretic effects. The intermittent fever, which is not uncommon in chronic pleuritis with effusion, may be treated with three granules of the arseniate of quinine four times daily, or twenty granules of the salicylate of quinine twice daily. If the effusion is very abundant, dyspnœa and displacement of the heart demand surgical interference. Thoracentesis should be performed only in cases in which the effusion is considerable and threatens life. The evidences of this effusion are complete silence upon auscultation, dullness on percussion over all or nearly all the anterior aspect of the thorax, the absence of vocal vibrations, and a feeling of fullness, which is evident to palpation, in the intercostal spaces. The indications for the operation and the steps which are to be taken are well described in "Clinique thérapeutique" of Dujardin-Beaumetz. If after the first thoracentesis neither the thoracic walls nor the pulmonary tissues return to their original position, it will be useless to repeat the operation, and a fatal issue will be hastened by the loss of strength which the operation necessitates. Thoracentesis should be preceded and followed by the liberal use of the incitants apomorphine and strychnine, so as to assist the pulmonary tissue in overcoming the inertia and want of expansibility which result from prolonged compression. Pleuritis with purulent effusion is accompanied by hectic fever, anorexia, sweating, etc. Before resorting to an operation, which is about the only thing which can be done, as a last resort, the activity of the digestive function should be stimulated by using three granules of quassine three times daily ; and preventing purulent infection by giving five granules of the salicylate of quinine and two of aconitine twice daily. After the operation, two granules of iodoform, with one of arseniate of iron and one of arseniate of strychnine, should be given twice daily, to arrest pyogenesis. If the acute pleuritis is diaphragmatic, the functions of the phrenic nerve may be interfered with, and a particular line of treatment required. Sedatives should be used freely with defervescents and antispasmodics, three granules of veratrine being given every half-hour until vomiting or contro-stimulation is produced ; also, one granule of hyoscyamine every two hours until a decided mydriatic effect is obtained. The cause of the pleuritis may also indicate a particular variant in its treatment. Thus, the treatment of pleuritis which is caused by cold should be six granules of the nitrate of pilocarpine every quarter-hour, or, if given hypodermically, twenty granules in a gramme of distilled water. Rheumatic pleuritis calls for the particular effect of colchicine. Pleuritis which is due to albuminuria, tuberculosis, or the eruptive fevers, should be treated mainly with intestinal and cutaneous derivatives, and by the treatment of the cause.

DOSIMETRIC TREATMENT OF PLEURITIS.

DOMINANT.

Inflammatory element	Aconitine, digitaline. Sulphate of strychnine.

VARIANT.

A. WITH REFERENCE TO THE NATURE OF THE EXUDATION.

Proliferative or dry pleuritis	Acute.	Hyperthermia		Aconitine.
		Dyspnœa		Aspidosamine.
		Costalgia		Hydrobromate of cicutine.
	Chronic.	Thoracic pains		Cicutine.
		Lymphatic diathesis		Arseniate of iron, iodoform.
Pleuritis with effusion	Acute.	Fever	Continued	Aconitine.
			Intermittent	Hydroferrocyanate, sulphate, or hydrobromate of quinine.
		Cough		Morphine, narceine, codeine.
		Dyspnœa	Fever	Aconitine, veratrine.
			Compression	Apomorphine, hypophosphite of strychnine.
		Costalgia		Cicutine.
	Chronic.	Fibro-serous effusion	Suffocation	Thoracentesis, diuretics.
			Intermittent fever	Arseniate or salicylate of quinine.
			Pseudo-membranes	Picrotoxine.
		Purulent effusion	Hectic fever	Surgical means.
			Anorexia	Quassine.
			Sweating	Atropine.

B. WITH REFERENCE TO SITUATION.

Diaphragmatic pleuritis	Contractures	Veratrine.
	Mental disturbance	Morphine.
	Dyspnœa	Cicutine.
	Hiccough	Hyoscyamine.

C. WITH REFERENCE TO CAUSATION.

Pleuritis from cold	Nitrate of pilocarpine.
Rheumatic pleuritis	Colchicine.
Infectious pleuritis	Sulphide of calcium.
Diathetic pleuritis	Derivatives, anticausatives.

Pleurodynia.—See Rheumatism.

Pneumonia.—The dominant in pneumonia must conform to the pathogenic idea which we have concerning the disease. To most pathologists pneumonia means only a simple inflammation; to others it is an infectious disease, the result of a poisoning of the organism by a specific agent, discovered by Friedlander, and named by him *pneumococcus*. Under the first hypothesis, the inflammatory element demands aconitine; under the second, the infectious element compels us to use the parasiticide *par excellence*, sulphide of calcium. Pneumonia is the type of inflammations, not only on account of the intensity of the inflammatory process and the extensive area of tissue attacked, but especially on account of the vascularity of the pulmonary tissue. All the therapeutical considerations to which Burggraeve was the first to call attention as resulting from experimental physiology are applicable to pneumonia. Thus, in the first phase of the inflammation, the phase of vaso-motor paralysis, the arseniate of strychnine and phosphoric acid are especially indicated; unfortunately, however, this phase has usually been passed when the physician is called, the inflammation is already established, and the treatment required is entirely different. Aconitine, the antihyperæmic medicament *par excellence*, gives, in inflammatory conditions, results which are the more excellent as the organs attacked are the more vascular. But, though the effect of the drug is rapidly produced, the congestion reproduces itself with equal facility. For this reason we should not only combine the defervescent remedies in our plan of treatment, but we should continue their use in gradually decreasing doses, and fix their effect by means of the neurosthenic agents brucine and strychnine. The immediate relation which exists between the pulmonary circulation and the heart compels us to consult the state of the pulse in order to insist upon one or another of the defervescents, according to the nature of the predominant symptoms. Thus, when the pulse is large, strong, and of good tension, two granules of veratrine should be given every quarter-hour; if the pulse is very frequent, a granule of digitaline should be given every half-hour until the number of pulsations is lessened. If the heart-force seems to be diminishing, one to two granules of strychnine may be given every half-hour. The use of aconitine, on the other hand, must be regulated by the thermometer; one granule may be given every quarter-hour if the temperature exceeds 39·5° C., every half-hour if it is 39° C. or under. If the infectious nature of pneumonia is assumed, and there are numerous and excellent reasons for such an hypothesis, one granule of the sulphide of calcium may be given every quarter-hour. This agent is very efficient as a defervescent; its elimination by the bronchial mucous membrane favors solution of the exudate which results from the disease, thus making it an excellent expectorant, and as a diaphoretic it corresponds to the causal indication. In no case can the sulphide of calcium do harm, whatever be the conception of the pathogenesis of the disease. Among the indications of the variant that which is most noticeable is a decided chill, if we are called at the beginning of the disease. To meet this symptom one granule of sulphate of strychnine combined with one of phosphoric acid should be given every quarter of an hour until reaction occurs. The pain in the side, which may be regarded as an intercostal neuritis, should be treated persistently with three granules of hydrobromate of morphine every quarter of an hour. The violence of the pain tends greatly to increase the dyspnœa, the pulmonary congestion, and the circulatory disturbance in general. Should the physiological effects of the morphine be apparent before its therapeutic effects, and compel us to suspend its use before its beneficial effects have been realized, it may be replaced by two to four granules of the tannate of cannabine every quarter-hour, or two of cicutine every half-hour. In the early stage of pneumonia, wet cups may be used with advantage. The dyspnœa, which is caused not only by pain, fever, hyperæmia, and diminution of the area of the respiratory field (which also diminishes the coefficient of oxygen for the red corpuscles), but also by troubles in the heart-action, must be treated with digitaline to regulate and strengthen the heart-muscle, in addition to aconitine and morphine, which respond to other indications. The cough, which assumes different characters in different stages of the disease, should be treated, during the fever, with Gregory's salt or iodoform, and codeine, two granules of each being given every quarter-hour until this symptom is relieved. If the cough is caused by difficulty in expectorating the inflammatory accumulation, we should give two or three granules of scillitine, emetine, or arseniate of antimony every two hours; or one of emetic every two or three hours, alone or combined with two of codeine, in case there is gastro-intestinal intolerance. Emetic and emetine can rarely be given to children, especially to nursing children. Their action is too depressing for very sensitive organisms, and this statement applies equally in cases in which they excite vomiting, and in cases in which they do not. If there seems to be a necessity to resort to their use, they should be given in very small quantities, combined with brucine or caffeine, which will increase the expectorant action and diminish the depressing effect. Emetine may be replaced by scillitine, kermes mineral, or lobeline, one granule being given every two hours. Bromide of camphor and helenine are also excellent expectorants, and may be used without danger, two granules of either being given three to five times daily. If there is adynamia, or fear that it may supervene, the hypophosphite of strychnine should be given without apprehension. It should be given in doses of two or three granules every hour until the pulse recovers its normal vigor. Such treatment is especially applicable in the pneumonia of the aged, and it has been successfully treated by the author by this method in all cases in which it has been seen sufficiently early. Success with any method of treatment is always the best guarantee of its efficiency. In all cases, however, the greatest vigilance is indispensable; all possible hypotheses must occur to the mind, and all must be carefully analyzed, in order that each exigency may be met as soon as it occurs. It must also be remembered that pneumonia *may* exist in the aged for several days before any outward symptom presents itself. The cough in such cases may be insignificant or without positive characteristics; there may be neither dyspnœa, anorexia, pain in the side, nor fever. The thorax must be carefully auscultated for its physical signs. A condition which is often attributed by the aged to constipation may be pneumonia, the grave character of which becomes manifest only when adynamia has generalized its symptoms. The hypophosphite of strychnine, regularly given night and day, generous wine, and a nourishing diet, may cure this disease, which is usually considered of grave import, because one always defers intervention until it has become incurable. As an expectorant and anticongestive, two granules of bryonine or two of apomorphine may be given every two hours with good results. Should expectoration continue to be difficult, and asphyxia be threatened from obstruction of the bronchi, emetic may be given, preceded, however, by strychnine, as in this way the dangers which usually attend its use during the adynamic period may be avoided. Mild delirium, which is symptomatic of cerebral anæmia, may be treated with two granules of caffeine every half-hour, or with similar doses of bromide of camphor. This symptom is not of particular importance, and calls only for a suitable reparative diet. Active delirium, which is of frequent occurrence among alcoholic subjects, is due to a want of cerebral stimulation. To restore the equilibrium, port or madeira wine diluted with water, so that an existing gastro-intestinal catarrh may not be aggravated, should be administered, or one granule of hyoscyamine every two hours. Icterus, which is due to catarrh of the biliary ducts, from extension of the gastro-duodenal inflammation, or from irritation produced by localization of the infection of the liver, calls for two granules of colchicine every two hours if the first of these two conditions obtains, or two granules of calomel every two hours until the dejections have regained their normal dark color. Gastro-intestinal catarrh, and the necessity of facilitating the elimination of the pneumococcus, require the use of Sedlitz Chanteaud, the dosage to be regulated by the conditions of each case. When asphyxia announces an approaching fatal termination from vital depression, œdema, or pulmonary stasis, large blisters should be used, and the hypophosphite of strychnine, as has already been indicated. It is only in such a condition that vesicants are useful, their function being to excite vaso-motor contractility, and to diminish the obstruction to the pulmonary circulation. If the disease follows its regular course, vesicants are not only useless, but they increase the suffering of the patient, expose him to the risk of taking cold, aggravate the causes of dyspnœa, and contribute notably to the appearance of albuminuria. Should pneumonia terminate in abscess, three granules of iodoform and two of arseniate of soda may be used every four hours. During convalescence the reparative forces should be stimulated by means of quassine to increase the appetite, and brucine to strengthen the lungs, two granules of each being given before meals; two granules of arseniate of iron should also be given with each meal to supply the red globules with iron. The ordinary classical treatment of pneumonia does not deserve the confidence of the physician, bleeding, emetics, etc., being condemned by statistics. The expectant plan is the one upon which physicians of the official school rely, while they prefer to do nothing and await a favorable turn of the disease. Let us leave them to their blindness and impenitence, and do our duty by employing our certain, effective, and harmless methods.

PNEUMONIA.	DOMINANT.	Infectious element	Sulphide of calcium.
		Pneumococcus	
		Inflammatory element	Aconitine.
	VARIANT.	Chill	Sulphate of strychnine.
		Pain in the side	Hydrochlorate of morphine.
		Dyspnœa	Digitaline, morphine, cicutine.
		Violent cough	Codeine, iodoform.
		Difficult expectoration	Scillitine, arseniate of antimony, emetine, emetic.
		Adynamia	Wine, iodoform, arseniate of strychnine.
		Full pulse	Digitaline, veratrine.
		Weak pulse	Hypophosphite of strychnine.
		Mild delirium	Caffeine, bromide of camphor.
		Active delirium	Wine, hyoscyamine.
		Icterus	Colchicine, calomel.
		Elimination of the infectious agent	Sedlitz Chanteaud.
		Asphyxia	Vesicants, strychnine.
		Abscess	Iodoform, arseniate of soda.
		Convalescence	Quassine, arseniate of iron.

Pneumorrhagia.—See Broncho-pulmonary Hæmorrhage (under *Hæmorrhage*).

Pollutions.—See Spermatorrhœa.

Pseudo-croup.—See Acute Catarrhal Laryngitis (under *Laryngitis*).

Purpura Hæmorrhagica.—See Scorbutus.

Rhachitis.—Pædiatrists are not in accord with respect to the true cause of rhachitis. While some consider that it depends upon and is one of the symptoms of hereditary syphilis, others affirm that syphilis is not at all necessary to its production, and that it results entirely from faulty nutrition, the organism excreting an excessive quantity of the inorganic elements which enter into the composition of the skeletal system. This opinion seems a reasonable one, and it is for that reason that the use of granulated phosphate of lime is recommended, a small teaspoonful to be taken with each meal. The hypophosphites of soda and lime will also fulfill this indication, and will have the advantage of not fatiguing the digestive organs, which sometimes happens after large doses of phosphate of lime. Two granules of the hypophosphite should be given at each meal. It is evident that this treatment must be continued for a long time, these agents being considered as foods rather than as medicines. It must not be expected that the organism can repair in a few days extensive disorders of nutrition. The variant in this disease has a manifest importance, since the greater number of the symptoms which accompany it are the cause of serious troubles of nutrition, which must be avoided with the most assiduous care. If insomnia is an element of trouble, the child should receive two to four granules of codeine at bed-time. The fever which accompanies the appearance of acute rhachitis should be treated with half a granule of aconitine every hour, more or less, according to the condition of the temperature. After the period of invasion there may be other attacks at irregular intervals, which should be treated with one or two granules of the hydroferrocyanate of quinine every two hours. The muscular debility and general prostration which accompany this disease should be treated with neurosthenics, the most appropriate of which is brucine, which should be given three to five times daily. Codeine should also be given to control vomiting in one- or two-granule doses, and as often as is indicated by the urgency of the case. Sweating, which is more or less profuse in character, is a prominent symptom, especially during sleep, and tends to weaken the patient and predispose him to bronchitis and other catarrhal affections. For this condition we should give one to four granules of agaricine every evening. Diarrhœa, which results from intestinal atony and imperfect digestion, indicates one granule of phosphate of iron before each meal and two of pepsin after each meal. Convulsions, which may proceed from different causes, may, nevertheless, all be cured by the use of two granules of the bromide of camphor and two of the valerianate of zinc every half-hour. Though it is not necessary to consider hereditary syphilis as the essential cause of this disease, nevertheless it furnishes conditions which are favorable to its development and which greatly aggravate the situation of the patient; it should be persistently treated by means of one granule of the biniodide of mercury two to four times daily. If, for any reason, it is deemed proper to suspend the use of the mercury, iodoform may be given in doses of one or two granules three times daily. The foregoing directions will prove of little benefit unless they are supported by the observance of suitable hygienic measures, new disorders being developed with great readiness when the departure from the physiological condition has reached a certain stage.

RHACHITIS.	DOMINANT.	Dystrophy as to calcareous elements	Phosphate of lime. Hypophosphites of lime and soda.
	VARIANT.	Insomnia	Codeine.
		Fever	Aconitine, hydroferrocyanate of quinine.
		Weakness	Brucine.
		Vomiting	Codeine.
		Profuse sweating	Agaracine.
		Diarrhœa	Phosphate of iron, pepsin.
		Convulsions	Valerianate of zinc, bromide of camphor.
		Hereditary syphilis	Biniodide of mercury.

Rheumatism.—Pathologists are yet far from a perfect knowledge of the manner in which rheumatic diseases are constituted. Therapeutics can, therefore, dispense with an analysis of these contradictory theories, since, if any one of them were true, it would destroy all the others and remove all doubts. Truth has for its characteristics unity and simplicity; if a proposition can be contested, it is because it is either false or incomplete. It is repugnant to the scientific spirit of the day, however, to throw itself into the arms of empiricism. Reason must always struggle in its search for truth, and the intellect is compelled to take as a support an hypothesis which, without explaining all the facts at issue, will at least serve as a guide in the most of its endeavors. Such a method is the best one, after careful examination, for reaching the grand road which leads directly to the source of the true light for which we may be searching. The study of rheumatism shows that two conditions are essential to its production: 1. Predisposition. 2. A determining cause. Predisposition consists in a chemical modification of the fluids of the body, uric or lactic acids being present in excess. The determining cause is unknown, but it would seem to be of an infectious nature. The similarity of the symptoms in true rheumatic arthritis and in blenorrhagic arthritis, in which the *gonococcus* is the true cause; the facility with which rheumatism appears in persons who are predisposed to it, in consequence of a simple change in the external surroundings; the fact that cerebral rheumatism may be cured by the use of cold baths; the duration and course of the disease when it is left to a spontaneous evolution; the multiplicity of its localizations; the unquestionable influence which is exerted upon it by the salicylates, the action of which is antizymotic; all these considerations conduce to the opinion that rheumatism is due to an unknown zymotic agent, which is developed as the blood is modified by an excess of certain organic acids. However this may be, it is certain that the physician is more fortunate in possessing a medicinal agent for the cure of rheumatism, the efficacy of which has been proved, than in possessing a theory which is capable of clearing away all doubts and explaining all phenomena. We can pass, therefore, to the study of the best means for treating and checking rheumatism, reserving for a final consideration the explanation of their therapeutic action. The most varied methods have been used in the treatment of acute rheumatism, having nothing in common but their want of efficacy. It is only within the last few years that therapeutics has possessed a class of agents of recognized value—namely, salicylic acid and the salicylates. After a few days of treatment with these agents, the pain will be diminished, the fever will disappear, and it will appear that the disease has been brought under control. But, aside from these advantages, there are certain disadvantages connected with the use of either the acid or its salts.

The doses must be very large, for it is necessary that the patient be saturated with the drug until the desired effect is obtained. The digestive organs will not always tolerate such excessive dosing, and it sometimes happens that the physiological effects anticipate the therapeutic, and thus leave the physician completely disarmed and helpless, the patient being unrelieved, instead of obtaining a prompt and durable relief. The advantages which may be obtained are also only transient; the slightest negligence on the part of the patient, the premature suspension of treatment, which should be continued for a long time, may give rise to a relapse which may prove much more rebellious than the first attack. Besides, intoxication may easily occur if the organs of elimination are not functionating properly. Among the alkaloids may be found certain agents which are as effective as the salicylates, and even much more certain in their action. The author would prefer colchicine to the salicylates in the treatment of all rheumatic affections, whether they involve the articulations, the serous membranes, or the nerves. Colchicum has always been used for gout, and, according to some authors, with an effect which is almost specific. It has not the same reputation for relieving rheumatism, although it would seem to be indicated for this as well as for gout. Its analgesic, antithermic, and derivative properties should indicate its use to fulfill all necessary requirements. The fear of giving such an active remedy until its full effect is obtained, the varying energy of its preparations, and the appearance of certain unpleasant symptoms, explain its limited use. The popularization of the alkaloids had the advantage of recalling into use a great number of excellent drugs which had been abandoned on account of the imperfection and irregularity of the preparations in which they appeared, and also because the other elements which were associated with the useful alkaloid in the given plant disturbed the action of the alkaloid by their action, and nullified its results. The action of colchicine, however, is simple, evident, and prompt. In all cases of rheumatism, whether simple or complicated, acute or chronic, colchicine may be given in accordance with two different methods—viz., the acute or active treatment, if the case is an acute one or an exacerbation of a chronic one; the slow treatment, if the disease follows the usual chronic course. In the active treatment, two granules of colchicine should be given at intervals of two hours until the therapeutic or physiological effect is obtained, the former being indicated by a cessation of the pain, the latter by diarrhœa, and perhaps by vomiting of bile, following the administration of the medicine. Both these effects are usually obtained simultaneously. This result having been obtained, the medicine must be continued at the same intervals, but in doses of only one granule. By this means the excessive discharge of bile will quickly be controlled, the therapeutic effects continuing. The author has seen neither relapses nor aggravation of the disease after the treatment has been discontinued. In addition to the use of colchicine, the patient must abstain from the use of acid in all forms, including wine, which always contains tartaric acid, because acids will decompose the alkaloid and transform it into another, which is much less powerful in its effects. For diet, soups and milk should be given in acute cases; in chronic ones we should simply insist upon abstinence from indigestible and irritating food. In the treatment of chronic cases, which include those which are accompanied by more or less continuous rheumatic pains, which may not be of great severity, and those which are accompanied by the presence of nodes, four to six granules of colchicine should be given daily. The physiological effect with such dosage is not apparent; the therapeutic effect becomes manifest after some time, but the treatment must be continued with regularity and perseverance. In some cases a *succedaneum* of colchicine will be of service, the most useful one being veratrine, which resembles colchicine in many respects. It may be given in doses of two granules every half-hour, the general directions which were given for colchicine being also applicable in respect to veratrine. The action of colchicine may be re-enforced by that of veratrine, two granules of each being given every two hours, or by the salicylates, three of the salicylate of soda or of quinine being given at intervals of two hours. In nodose rheumatism, two granules of arseniate of soda may be given three times daily with an equal quantity of colchicine; or the colchicine may be replaced with three granules of iodoform three times daily, and the arseniate of soda by three granules of the cyanide of zinc three times daily. This treatment should be continued for months, or even years. The author has almost entirely given up the treatment of rheumatism by external applications, no advantage having ever been obtained from the various sedative, stimulant, anodyne, and revulsive applications, which are useful only to draw away the patient's attention from his immediate sufferings, and which expose him to relapses. In monarticular rheumatism, whether acute or chronic, subcutaneous injections of colchicine may be made, four granules of the colchicine being dissolved in a gramme of distilled water. According to O. Hayfelden, of St. Petersburg, these injections have an almost miraculous effect, although the tissues may be somewhat irritated. Douches, sulphurous and saline baths, electrical applications, etc., have indications and advantages which need not be insisted upon. After having thus established the treatment of the dominant, it will sometimes, though not often, be necessary to have recourse to other medicinal agents to combat troublesome symptoms. For the pain of this disease, we may combine with the dominant two-granule doses of cicutine hourly, or one of morphine every quarter-hour, or the morphine may be given hypodermically. Should the fever exceed

39° C., one granule each of aconitine, veratrine, and digitaline may be given at intervals of one hour or more, but this must not imply any interruption in the administration of the colchicine, which should be continued in accordance with the rules which have been given. Should there be the element of periodicity in the pain or the fever, we should associate with the other remedies the salicylate of quinine in doses of three to five granules at intervals of two hours. Sweating may sometimes be too profuse and require treatment; for this purpose a granule of atropine may be given every two hours until either the physiological or the therapeutic effect is obtained. Anæmia, which rarely occurs among those who are treated according to the principles of dosimetry from the beginning of the disease, should be treated with the salicylate of iron and a strengthening diet. The cutaneous eruptions, which sometimes alternate with the rheumatic attacks, may be readily cured with colchicine. Pruritus should be treated with three-granule doses of the hydrobromate of cicutine every half-hour. The complications, endocarditis, pleuritis, peritonitis, pneumonitis, and meningitis, should receive the same treatment as that which is used for the inflammation of the joints, that is, colchicine, and the variable symptoms arising from the complications by the variant which is appropriate for each. Rheumatic encephalopathy is the gravest of all the complications which may occur, and was long considered quite incurable. The danger in encephalopathy consists in hyperthermia. In this condition hesitation is not to be thought of, and we should at once make use of a combination of all the hypothermic agents in as active a form of treatment as possible, for this complication may be fatal in the course of a few hours. Two granules of aconitine should be given with four of veratrine, one of digitaline, and two of colchicine every half-hour, the quantity of each substance and the intervals between the doses being regulated by the effects which are produced. The value of cold baths must not be overlooked; in many cases they will prove the only means of preserving health. In all cases the thermometer must be resorted to as a guide for regulating the treatment. The temperature of the bath should be 25° C., and this may be kept constant either by the addition of cold water or ice. The patient should remain in the bath until his temperature is considerably reduced. After having been dried and rubbed, he should receive stimulating drinks; should the temperature rise again, the baths should be repeated until the bad symptoms have disappeared. The author hesitates to advise the simultaneous use of the cold baths and the dosimetric treatment by means of defervescents. He has never adopted this plan in his own practice, though it has been done with advantage by other physicians. In any case in which either of these methods used alone does not produce the desired result, the circumstances of the case will indicate whether he should resort to extreme measures and combine internal with external measures of refrigeration. It is of great importance that no time be lost in moderating the febrile condition, whatever method be employed. The author will not attempt to explain the manner in which cerebral rheumatism may be cured by means of refrigerant remedies, but will simply conclude this chapter by attempting to explain the action of colchicine. The most evident action of colchicine is that of a cholagogue. Is it the excessive biliary and intestinal secretion that it excites, which, by modifying the condition of the blood, removes the elements which convert it into a medium that is suitable for the development of the rheumatic condition? Is it its irritating action upon the intestine, which, by removing the inflammation in the joint, dissipates the arthritis? Does it relieve the pain by acting upon the general sensibility? Or is it a combination of these effects which, by attacking the disease in its principal constituent elements, destroy it, dissolve it, or check it? The recognized efficiency of antimony in the treatment of rheumatism seems to justify the latter view, but the parallelism is entirely in favor of colchicine, which appears to have particular properties as an anti-rheumatic agent. The local action of colchicine, which Hayfelden has declared to be admirable, justifies the hypothesis that this agent possesses certain specific properties.

RHEUMATISM.	DOMINANT.	Acute rheumatism		Colchicine, veratrine, salicylates.
		Chronic rheumatism	Ordinary form	Colchicine, cyanide of zinc.
			Nodose	Colchicine, arseniate of soda. Iodoform, cyanide of zinc.
	VARIANT.	Pain		Cicutine, morphine.
		Fever	Continued	Aconitine, veratrine, digitaline.
			Periodic	Salicylate of quinine.
		Profuse sweating		Atropine.
		Anæmia		Salicylate of iron.
		Eruptions		Colchicine.
		Pruritus		Hydrobromate of cicutine.
		Carditis Pleuritis Peritonitis Pneumonitis Meningitis		Colchicine, aconitine. Variant as in each disease taken by itself.
		Cerebral rheumatism		Defervescents, cold baths.

Rhinitis (*Coryza*).—Acute rhinitis may proceed from several causes, the most common of which consists in atmospheric changes, and this is the one which it is most important for the physician to recognize in practice. Coryza is the type of catarrhal diseases. Without danger when it is simple and properly treated, it may become the cause of different annoying conditions if it is allowed to pass into the chronic state, whether from disregard of the proper hygienic and pharmaceutical means of treatment, or from neglect of the indications furnished by any morbid condition whatsoever which maintains it or predisposes to it. However benign this inflammation may be, we should not leave it to take its natural course, which frequently does not result in complete resolution. Besides, the longer a coryza lasts the more chances are there for successive relapses, not to speak of the baneful influence which it may have upon contiguous organs—the pharynx, conjunctivæ, ears, larynx, bronchi, etc. The dominant indication in acute rhinitis is to combat the catarrhal inflammation by the use of one granule of aconitine every hour, and to restore the suppressed perspiration by means of six granules of the nitrate of pilocarpine every quarter-hour until diaphoresis results. Perspiration having been excited, aconitine is to be continued. Aconitine does not limit itself to assisting this diaphoretic action and opposing the inflammation of the nasal mucous membrane; it will promptly relieve the headache and counteract the catarrhal fever. After the antithermic effect has been obtained, aconitine may be alternated with the hydroferrocyanate of quinine, three granules being given every two hours. The acute period of the disease is quickly followed by that of mucous secretion, and the function of secretion and elimination may be aided by the use of three to five granules of the sulphide of calcium every two hours, or two granules of helenine every three hours. Should the secretion be too abundant a granule of atropine every three hours will promptly modify it. Epistaxis at the beginning of the disease is almost always useful, but, should it become troublesome, three granules of ergotine may be given every quarter-hour until hæmostasis results. Infants at the breast, being very sensitive to the action of cold, are also very susceptible to coryza. At this early age the disease is not without gravity, on account of the obstacle which obstruction of the nares offers to the act of sucking. The application of fatty substances to the root of the nose, over the frontal sinuses, and within the nares, will promptly restore the ability to breathe through the nose. Persons who are subject to catarrhal troubles ought, especially during the winter and spring, to use habitually two granules of strychnine and two of aconitine at bedtime, and Sedlitz Chanteaud early in the morning. Hydrotherapy, in the form of daily intranasal injections of cold water, will also be found serviceable. Acute coryza, in connection with infectious diseases, requires no particular treatment in addition to that which is directed toward the principal morbid condition. The sulphide of calcium should be the dominant in such cases. Chronic rhinitis is almost always due to some diathetic fault, and especially to scrofula. Three granules of iodoform and two of the arseniate of soda three or four times daily, saline baths, nutritious diet, cod-liver oil, and astringent tonic wines, are the most efficient means for the successful treatment of chronic rhinitis of scrofulous origin. Herpes and syphilis often render this condition an incurable one. For such cases the antiherpetic and antisyphilitic agents are indicated. Ulcerative coryza or ozæna is caused by an ulcerated condition of the nasal mucous membrane, which results in a fetid condition of the air which is expired through the nostrils, although the latter condition may be present even if the ulcers are absent, owing to putrefaction of the muco-purulent secretions of the nasal mucous membrane. The internal treatment should be that of simple chronic coryza, but the local trouble should be treated by local applications of antiseptic agents, the best of which are the following:

(1) ℞ Iodoformi porphyrisati,
Bismuthi subnitr.,
Aluminis pulv., āā partes æquales.
M. et ft. pulvis.

(2) ℞ Aquæ,
Liq. *Goudron*.......... āā q. s. M.

(3) ℞ Potassæ permang....... 1 gramme.
Aquæ.................. 100 grammes.

M. Sig.: First inject plain water into the nostrils, then follow with the foregoing.

(4) ℞ Vaselini............... 25 grammes.
Calomelani............ 2 grammes.
M. Sig.: Introduce into the nostrils upon cotton.

RHINITIS.

DOMINANT.	Acute rhinitis	Catarrhal element	Nitrate of pilocarpine.
		Infectious element	Aconitine.
	Chronic rhinitis (simple or ulcerative)	Scrofulous element	Iodoform, arseniate of soda.
		Herpetic element	Arsenious acid.
		Syphilitic element	Protiodide of mercury, iodoform.
VARIANT.	Cephalalgia		Aconitine.
	Intermittent fever		Hydroferrocyanate of quinine.
	Catarrhal secretion		Sulphide of calcium. Helenine, atropine.
	Epistaxis		Ergotine.
	Fetid secretions		Antiseptic errhines.

Rubeola.—This disease is considered a benign one by many writers, but it deserves a certain degree of attention on account of the dangers which attend either the expectant plan of treatment or any other method which is inappropriate to the nature of the disease. Sporadic cases are properly designated by the name which the Italians give to the disease—*morbillo*, that is, the *slight* or *insignificant disease;* but when the disease becomes epidemic it may be one of the most destructive as to its termination, from the complications which are associated with and follow it, if not from the evolution of its parasitic elements. It is not necessary, at this time, to criticise the work which has been done with reference to the proper treatment of this disease. We can limit ourselves to the opinion of Franz Mayer, professor of the diseases of children at Saint Anna's Hospital for children in Vienna, and which is given in Hebra's "Treatise on the Diseases of the Skin": "We do not know of any medicament which will guarantee a favorable termination to measles. This opinion results from a comparison of cases which have followed their course without medical treatment, with other cases treated by both old methods and new. In whatever way one may treat them, the result is always the same. In all cases, it will be proper to refrain from using diaphoretics and alteratives, for, though they may facilitate to a certain degree the natural course of the evolution of the eruption, they may also favor the development of certain complications. With reference to the consequences, it must not be forgotten that affections of this kind are frequently the result of scrofula, tuberculosis, anæmia, or poor food. The use of medicaments internally, which is indicated by the existence of one of these conditions, will almost always prove useless on account of the rapid progress of the complications." The conclusion from this passage, which is an expression of the sentiments of the great majority of regular practitioners, is therefore in effect: Complications are to measles as effects to their causes—for the causes, apply the expectant plan of treatment; for the effects, use ineffective treatment. Dosimetry is more logical as well as more humane. With this system of treatment the problem is to eliminate the causes so as to prevent the primary effects from being produced; then, if primary results have occurred, to treat them and prevent secondary ones. Of what use is pathology, why do we study the succession and dependence of morbid phenomena, if no practical advantage can be drawn, if we must be limited to the contemplation of the natural course of diseases? In the zymotic, parasitic, infectious diseases, etc., the knowledge of the primordial pathological cause imposes an indication of great importance—namely, the extirpation of the microbes which are distributed through the system of the patient. In the present state of science prophylactic treatment consists in inoculation with the virus of the disease which has been so attenuated as to produce harmless results; curative treatment should find a bactericide which will be effective in its action upon microbes, and will be tolerated by the organism. If this fundamental indication is filled, it is evident that the therapeutic problem will be much simplified, for the task will then be to seek for agents to eliminate the residue of the invading microbes, and to sustain Nature in her efforts to heal their ravages. Sulphide of calcium, the bactericide which is so effective in the treatment of variola and croup, if employed in accordance with rules which are indispensable for obtaining the desired effect, will be equally successful in the treatment of rubeola. Infection by this disease, which is less violent, less general, and less acute than variola, requires a no less active treatment than variola if one would destroy it in a few hours. It is not necessary to repeat the pathogenic considerations which are given at length under the head of variola; they will apply equally in this disease with reference to the administration of sulphide of calcium. In rubeola the plan of aborting the disease is not often necessary, because the period of invasion is usually longer and the precursory symptoms less characteristic than is the case in variola. In the period of invasion we should therefore give one granule of the sulphide of calcium every half-hour or every quarter-hour, according as the condition is more or less remote from the period of eruption. In this period we should satisfy the more urgent indications of the variant. We should give aconitine if the temperature is high or if there is delirium or convulsions, combining it with the bromide of camphor or croton chloral, in two-granule doses every hour, if perturbations of the nervous system follow the fever. The violent headache should be treated with one granule of caffeine every half-hour, the cough with one granule of codeine every quarter-hour, and the paroxysms of spasmodic suffocation with one granule of hyoscyamine every hour. If we are called to a case during the period of eruption we should continue the use of the sulphide of calcium, for the fundamental indication still exists; we may give it, however, in one-granule doses every hour. In that form of the disease in which the function of elimination seems to be localized in the respiratory apparatus, we must treat the prostration and ward off collapse by the use of one granule of brucine or of the hypophosphite of strychnine every hour, and we should facilitate expectoration by means of one granule of emetine, kermes mineral, or scillitine, every two hours. In the neurotic or ataxo-dynamic form of the disease, we should use, in a liberal manner, arseniate of strychnine, phosphoric acid, and valerianate of quinine; one granule may be given every hour. Generous wine or quinquina, in small and often repeated doses, are also excellent auxiliary means of treatment. In the hæmorrhagic form, the chances of recovery are few, and the best plan is to prevent the occurrence of the disease by the use of bactericides. Should it actually occur, however, we should give one granule each of ergotine, tannic acid, and salicylate of ammonia. In the period of desquamation, the dominant is furnished by the asthenic condition, and should be satisfied with quassine and strychnine. The variant will have reference to the persistence of certain symptoms which denote that elimination continues in progress at certain points in the organism. We should give Sedlitz Chanteaud, colchicine, benzoic acid, or the benzoates, to stimulate the functions of the emunctories. Such is the rational treatment of rubeola, which has been demonstrated by practical experience to be the most effective. A few years ago, when the author was still occupied with practice in the regular school, he assisted in the treatment of an epidemic of rubeola in which the mortality was greater than in an epidemic of variola, in which he was also concerned. All the patients died from the *sequelæ*, which were bronchitis or enteritis. Since that time all the sporadic cases in the author's practice have been treated with the sulphide of calcium, with the result of modifying the course of the disease. In three or four days after the eruption appeared, the patients were able to be about. Not long ago the author was called to see a patient who presented the most pronounced symptoms of rubeola which he had ever seen. The fever reached 40° C., the conjunctivæ were injected, and there was continuous weeping; there was a hoarse cough and coryza, the eruption was prominent, being abundant upon the limbs, but very slight upon the trunk. A granule of the sulphide of calcium was ordered every hour. On the following day great improvement was manifest; the conjunctivæ were white and had only the normal quantity of moisture, the coryza had disappeared, the eruption was less prominent, but the cough still continued to fatigue the patient, and the temperature had reached 38·5° C. Two days afterward the disease seemed to be entirely overcome. This result may not have been due to the treatment alone. The disease would probably have been of a benign character, but it is certain that the influence of the drug upon the progress of the disease was a positive one for good.

RUBEOLA.

Dominant.

Parasitic infection	Sulphide of calcium.

Variant.

1st period: Invasion.	Fever	Aconitine, salicylate of quinine.
	Cough	Codeine.
	Pseudo-croup	Hyoscyamine.
	Cephalalgia	Caffeine, guaranine.
	Delirium, convulsions	Bromide of camphor, croton chloral.
2d period: Eruption.	Capillary bronchitis (pulmonary form)	Brucine, hypophosphite of strychnine, emetine, scillitine.
	Ataxo-adynamic condition (neurotic form)	Phosphoric acid, valerianate of zinc, generous wine, quinquina.
	Epistaxes, hæmaturia, petechiæ (hæmorrhagic form)	Ergotine, salicylate of ammonia, tannic acid.
3d period: Desquamation.	Asthenic condition	Quassine, strychnine.
	Retention of the products of infection	Sedlitz Chanteaud, colchicine, benzoic acid, benzoates.

Scarlatina. — Scarlatina, like the other eruptive fevers, is due to the infection of the organs by a particular microbe, the destruction of which may be accomplished by means of the sulphide of calcium, which acts not only to cure the patient, but also tends to protect those who are exposed to the morbid germ. The internal disinfection should be carried out with the same earnestness and by the same method which is advocated for variola, that is, one granule of the salt every quarter-hour, whether the patient be a child or an adult, only short intervals being allowed, when the system seems to be saturated with hydrogen sulphide. In addition to the dominant, which is indispensable and may be used during the entire course of the disease, other agents must occasionally be employed to fill secondary indications, but this will occur, as a rule, only in cases in which the dominant has not been used from the beginning to control the pathogenic element. In the period of invasion it may happen, in certain cases, that the chill, on account of its violence, will demand the use of the neurosthenic agents, especially the arseniate of strychnine, in one-granule doses every quarter-hour, in order to diminish the vaso-motor paralysis which follows this spasmodic condition. When the invasion is suspected, the salicylate of quinine, in one-granule doses every quarter-hour, may be advantageously combined with strychnine. Cephalalgia and fever may be relieved by aconitine, one-granule doses being given at such intervals as may be indicated by the temperature. If the fever exceeds 39·5° C., we should give aconitine every quarter-hour, being satisfied with a moderation of the temperature which shall approach the normal, since the sulphide of calcium has a true defervescent action in such cases, by controlling the parasitic infection. When the patient complains of pain in the throat, he should be instructed to dissolve a granule of aconitine in the mouth at suitable intervals, which will rapidly soothe the irritation of the pharynx. Should the angina become worse, three granules of cocaine may be given every half-hour until a sedative effect is obtained. Non-suppurative parotiditis should be treated with two granules of the nitrate of pilocarpine every half-hour, to facilitate the elimination of the virus of the disease; while the suppurative form may be treated with one granule each of iodoform and arseniate of quinine every hour. Adenitis of the cervical glands should be treated in the same way. In the very grave forms of the disease, the nervous agitation, delirium, and ataxia may be relieved with two granules of the bromide of camphor every half-hour. The convulsions, should they not yield to the use of the camphor, may be treated with two granules of the valerianate or the hydrobromate of quinine every quarter-hour. For somnolence or the comatose condition, two granules of caffeine or of one of its salts may be given every quarter-hour. For adynamia, two granules of the arseniate of strychnine should be given every two hours, or, if the progress of this condition is a slow one, caffeine and generous wine may be administered. Vomiting at the beginning of the disease is not significant, but, should it occur after the eruption has appeared, it would indicate that the digestive canal was taking part in the work of depuration, which should be facilitated by the use of Sedlitz Chanteaud. The act of vomiting, which fatigues the patient and aggravates his general condition, may be checked by the use of two to four granules of codeine or Gregory's salt every half-hour. Cutaneous and internal hæmorrhages are of grave prognostic significance. Two to four granules of ergotine, with one or two of salicylate of iron every hour, are means which offer the best results. Attacks of syncope are due to infectious myocarditis. The tonicity of the heart may be increased by using three granules of caffeine and three of ergotine every half-hour. Diphtheritic deposits upon the tonsils and pharynx should be treated locally with applications of lemon-juice, and three granules of nitrate of pilocarpine should be taken internally every two hours to facilitate the separation of the false membrane. Gangrenous conditions should be treated with two granules of salicylate of ammonia and two of quinine every hour. Albuminuria, anasarca, and uræmic accidents should receive appropriate diuretic and laxative treatment; for example, one granule of digitaline and one of aconitine three times daily, or two granules of asparagin every hour; and a dessertspoonful of Sedlitz Chanteaud in a glass of water as an ordinary beverage. The benzoates are also useful when the albuminuria has begun to diminish, two granules being given four times daily. Great care must be taken to avoid chilling the cutaneous surface, or preventing in any way the process of elimination by the other emunctories.

SCARLATINA.	DOMINANT.	Infectious element	Sulphide of calcium.
	VARIANT.	Chills	Arseniate of strychnine.
		Headache	Salicylate of quinine.
		Fever	Aconitine.
		Angina	Cocaine.
		Parotiditis	Nitrate of pilocarpine.
		Cervical adenitis	Iodoform, arseniate of quinine.
		Nervous agitation	Bromide of camphor.
		Ataxia	
		Delirium	
		Convulsions	Valerianate of quinine.
		Somnolence	Caffeine.
		Adynamia	Arseniate of strychnine.
		Vomiting	Sedlitz Chanteaud, codeine. Gregory's salt.
		Hæmorrhage	Ergotine, salicylate of iron.
		Syncope	Ergotine, caffeine.
		Diphtheritic deposits	Nitrate of pilocarpine.
		Gangrene	Salicylates of ammonia and of quinine.
		Albuminuria	Digitaline, aconitine, asparagine, Sedlitz Chanteaud.
		Anasarca	

Sclerosis of the Brain.—See Chronic Encephalitis.

Scorbutus and Purpura Hæmorrhagica, or Werlhoff's Disease.—*Scorbutus* and *purpura* should be studied together, since they differ only in the acuity of their progress and the rapidity with which they are established. It might be said that *purpura* is acute *scorbutus*, or, on the other hand, that scorbutus is chronic *purpura*. Let us endeavor to find the true cause of this disease, as well as its fundamental lesions. Up to the present time we are entirely ignorant of the conditions which excite this change in the health. We know that it appears under the influence of bad hygienic conditions, and that alimentation bears a particular relation to it; but it is often observed, also, after depressing experiences of a moral nature, and sometimes without anything in the previous history of the patient which could be taken as a clew. From its usual etiology, from its symptomatology, and from the result of certain modes of treatment, it may be concluded that the primordial cause of scorbutus is a hyposthenic condition of the venous system. The dominant should consist, therefore, in the use of ergotine and the lactate or salicylate of iron, one granule of each being given every two hours. The normal solution of the perchloride of iron may also be used in doses of thirty or forty drops daily. Pains in the extremities may be relieved by the use of three granules of the hydrobromate or the valerianate of quinine every hour. For constipation, five granules of podophyllin should be given two or three times at intervals of two hours. The diarrhœa, which is almost always of a fetid character, may be controlled by using three granules of the salicylate of quinine or three of tannic acid every two hours. Syncope, which is very dangerous in the adynamic condition of the patient, should be treated with three granules of caffeine every five minutes, or with subcutaneous injections of ether, half a gramme being injected every half-hour until a satisfactory result has been obtained. For hæmorrhages we may use five granules of ergotine with one of sulphate of strychnine every quarter-hour. Not infrequently there are spasms which are due to stimulation of the muscles by the deteriorated blood. If they are painful or very violent, one granule of valerianate of atropine should be given every half-hour until relief is obtained. The stomatitis does not require any particular treatment. Some topical application of a disinfectant and astringent character should be used, however, to improve the circulation of the gums, and prevent the ulcerations and hæmorrhages which frighten so many patients.

This indication may be met by occasionally dissolving in the mouth a granule or two of iodoform and brucine, or rinsing out the mouth with an alcoholic solution of chlorate of potash of the strength of 15 : 200. The vegetable acids, antiscorbutic plants, etc., need not be used, for nothing but a vague tradition as to their specific properties sanctions their use. Ergotine and iron are the true remedies for this disease, and they have been tried by different therapeutists with a uniform degree of satisfaction.

SCORBUTUS AND PURPURA.	DOMINANT.	Venous hyposthenia	Ergotine, iron.
	VARIANT.	Pain	Valerianate of quinine.
		Constipation	Podophyllin.
		Diarrhœa	Salicylate of quinine, tannic acid.
		Syncope	Caffeine, injections of ether.
		Hæmorrhage	Ergotine, sulphate of strychnine.
		Spasm	Valerianate of atropine.
		Stomatitis	Iodoform, brucine.

Scrofula.—The cause of scrofula is still unknown. The parasitic theory which places it by the side of tuberculosis, although very seductive, does not explain all the facts of the disease. The facility with which some of its symptoms are relieved—for example, the conjunctivitis—by the use of saline baths appears to indicate that the disease proceeds principally from an atonic condition of the lymphatics, which gives rise to irregularities in the lymph circulation, which are manifested by engorgements with inflammation and subsequent suppuration. The primordial lesion, according to this hypothesis, is a functional perturbation, which consists in a general hyposthenia, more pronounced in the lymphatic system than in any other. The result of the use of stimulating medicaments supports this supposition, and, therefore, we can establish as the dominant juglandine and phosphoric acid. The preparations of *Juglans regia* are to be classed among the bitter astringents, and the antiscrofulous properties of the drug have been known for a century. Baumes, Negrier, and Pouguet have carefully studied the results of this treatment, and are in harmony in recognizing it as superior to all others. The variability of action of the preparations which are made from this plant, and the intolerance of the stomach for an irritant agent which must be continued for a long time, explain the oblivion into which these preparations had fallen. The alkaloid, which is without these inconveniences, enables us to continue the use of the drug as long as is necessary; but it must be remembered that the first effects are always produced slowly, and that it is indispensable that we persevere in its use for a long time. Three to four granules should be given three times daily before each meal. Phosphoric acid is equally useful for this disease on account of the general stimulation which is produced, by which also the lymphatic system is benefited. Phosphorus has long been regarded as one of the best remedies for scrofula, but it has inconveniences which do not exist in phosphoric acid. We can begin by using two granules three times daily, gradually increasing the dose if a favorable result is not obtained at the end of three or four weeks. The lymphatic diathesis is an almost inseparable companion to the scrofulous. This predisposition likewise serves as an obstacle to the cure of the latter. Should it show itself, it should be treated with a combination of iodoform and arseniate of iron if it appear in the torpid form, or with arseniate of soda if in the irritable or erethistic form, two granules of each being given three times daily. In cases which are attended with suppuration we should persevere in the use of the dominant, giving two granules of iodoform, combined with two of arsenious acid, three times daily. The glands which do not suppurate may be saved by injecting six to twelve drops of Fowler's solution. Those glands which have opened should be dressed with iodoform or with glycerole of phenic acid. The local phenomena upon the skin and mucous membranes may be modified by the stimulant action of sulphide of calcium, two or three granules being given four times daily. The local developments in the skeleton will require, in addition to the dominant, iodoform and hypophosphite of strychnine; for the local developments in the viscera we should use iodoform and arseniate of strychnine. All hygienic means which will stimulate the circulation will greatly aid the pharmaceutical treatment. Gymnastics, exercise in the open air, sunshine, cold baths, etc., should form a part of every plan of treatment. The diet should be substantial and varied, condiments being allowed in moderation. The appetite should always be watched, and, if it should appear to fail, it may be stimulated by means of three granules of quassine or of piperine before each meal.

SCROFULA.	DOMINANT.	Atony of the lymphatics	Juglandine, phosphoric acid.
	VARIANT.	Lymphatic diathesis: Torpid	Arseniate of iron, iodoform.
		Lymphatic diathesis: Irritable	Arseniate of soda, iodoform.
		Anorexia	Quassine, piperine.
		Suppuration	Iodoform, arsenious acid.
		Localizations upon the skin Localizations upon the mucous membranes	Sulphide of calcium.
		Localizations in the skeleton	Iodoform, hypophosphite of strychnine.
		Localizations in the viscera	Iodoform, arseniate of strychnine.

Septicæmia.—See Traumatic Fever (under *Fever*).

Spasm of the Glottis.—Spasm of the glottis is a contraction of the vocal muscles which results from exaggerated excitability of the spinal nerves. As the spasm lasts only a few minutes, one has no time to interfere; the attack either ceases or destroys the patient before the surprise which it excites has passed away. The treatment should have for its end, therefore, the diminution of nervous excitability; for, as the disease is rarely limited to one attack, and as there are always long intervals between the first attacks, we ought not to give way to an inaction which may result fatally. On the other hand, we should profit by this interval, and give atropine for a long time in doses proportionate to the age and tolerance of the patient; say, from half a granule to a granule two or three times daily. Constipation, which is the most frequent cause of the condition, should be treated with one to three granules of podophyllin once daily; or the bowels of young children may be regulated by the use of three granules of jalapine once or twice daily. These attacks sometimes recur with a certain periodicity, in which case we should administer one granule of hydroferrocyanate of quinine every two hours during the forty-eight hours which follow the spasm. This dose may be doubled or even trebled for children more than two years of age. If the attacks are repeated at regular intervals of greater duration, with the atropine we may combine two granules of the hydroferrocyanate or the hydrobromate of quinine three times daily. During and after the spasm, contractures and convulsions sometimes occur. Two granules of croton chloral or of bromide of camphor may be given every quarter-hour, or oftener, for the first, and two granules of the valerianate of zinc every half-hour or one of phosphoric acid every two hours for the convulsions. The phosphoric acid is especially useful in eclampsia of a severe form in delicate children. If the spasm continues very long, apnœa and asphyxia will result. The only way to interfere with the necessary rapidity is to cause ether to be inhaled, or to excite the nerve force at another point by the aid of Mayor's hammer or by burning a small quantity of alcohol upon the skin.

SPASM OF THE GLOTTIS.	DOMINANT.	Excitability of the spinal nerves	Atropine.
	VARIANT.	Convulsions . . .	Valerianate of zinc.
		Contractures . . .	Croton chloral.
		Constipation . . .	Podophyllin.
		Apnœa	Ether, Mayor's hammer.
		Asphyxia. . . .	
		Recurrences . . .	Hydroferrocyanate of quinine.

Spermatorrhœa.—Spermatorrhœa is a functional lesion, quite analogous to incontinence of urine, and might with greater propriety be called incontinence of semen. It should be considered as diurnal and as nocturnal spermatorrhœa. The nocturnal variety is essentially caused by congestion of the genito-urinary organs which, by the centripetal impressions which they send to the cerebro-spinal system, produce erotic dreams in the brain, and excite in the cord the centers which determine erection of the penis. This congestion results most frequently from distention of the bladder by an accumulation of urine. The principal indications, therefore, will be—

1. To urinate as often as necessary during the night, and to drink but little at the last meal. This precaution will often suffice to prevent pollutions, which almost always occur in the morning when the bladder is full.

2. This susceptibility of the bladder to congestion and tendency to seminal discharge certainly proceed from atony of the excretory canals, from weakness of the muscular coat of the bladder, and from failure in the vaso-motor force of its vessels. It is therefore indispensable that an excito-motor be administered which shall be capable of furnishing to these elements the force by which they are deficient. Therefore, the sulphate or hypophosphite of strychnine, ergotine, or brucine will constitute, with the other neurosthenics, the dominant of the treatment. Aconitine will have a special influence upon the hyperæmia of the bladder.

3. Another element which contributes to the morbid condition is the exaggeration of the vesical sensibility and the increase of reflex action, by virtue of which ejaculation is accomplished. Cicutine should therefore be associated with the dominant in the plan of treatment, which thus becomes a complex one; and, indeed, dynamic lesions in themselves are complex. The treatment should therefore consist in the use of two or three granules of strychnine with each meal, together with three granules of ergotine, and at bed-time three granules of cicutine and two of aconitine. It often

happens that the patient, unaware that the bladder is full, does not awaken sufficiently to urinate, and, the urinary secretion continuing, the pollution takes place as has been explained. The cerebral torpor, which becomes the more pronounced the more frequent the pollutions, should be treated with two granules of atropine at bed-time and two more in the middle of the night. Diurnal pollutions are of much greater gravity and more rebellious than nocturnal ones. Not only do they destroy the vitality of the patient more quickly, but they are the evidence of a more profound perturbation of the nervous forces. For this condition we should use curative means with the greatest perseverance, because the consequences are often disastrous, whether they lead to marasmus and phthisis or to suicide or mental disorders. In this condition the vital force should be increased by every means. For loss of appetite we should give three granules of quassine or two of piperine before each meal. Apepsia, which tends to debilitate the patient and aggravate the spermatorrhœa, should be treated with three granules of pepsin after each meal. Impotence, which is the inevitable consequence of weakness in the genital organs, will disappear entirely or in part, after the cure of the spermatorrhœa, by the prolonged use of three granules of the hypophosphite of strychnine two or three times daily. General debility is very decided after this condition has lasted some time. When it appears, we should prescribe two granules each of the arseniate of iron, arseniate of strychnine, and phosphoric acid with each meal. Fecal retention must be carefully avoided, so much the more because spermatorrhœa conduces to irregularity in the evacuations of the bowels. The patient should take a small spoonful of Sedlitz Chanteaud in water every morning, and, if this does not suffice, three granules of podophyllin or of veratrine every evening. The diet should be tonic and analeptic, but not stimulating. Sponge-baths, exercise in the open air, and rigorous avoidance of all erotic imaginations are indispensable hygienic requirements. The hypersecretion of the vulvo-vaginal glands produces in women nocturnal pollutions, which may induce great debility. Tonic treatment with strychnine and iron, and five granules of bromide of camphor at bed-time, will usually control this condition.

SPERMATORRHŒA.	DOMINANT.	Atony	Arseniate of strychnine. Ergotine.
		Reflex hyperæsthesia	Cicutine.
		Vesical hyperæmia	Aconitine.
	VARIANT.	Cerebral torpor	Atropine.
		Loss of appetite	Quassine, piperine.
		Apepsia	Pepsin.
		Impotence	Hypophosphite of strychnine.
		Fecal retention	Sedlitz Chanteaud.
		General debility	Arseniate of iron. Arseniate of strychnine. Phosphoric acid.

Splenitis.—Splenitis is rarely diagnosticated in the acute condition. The vascularity of the organ indicates aconitine and ergotine. In most cases splenitis is seen in its chronic form as the result of repeated congestions of the organ, and due particularly to malarial poisoning. The condition of the blood and of the splenic circulation must be modified, the first by the use of the arseniates of soda and quinine, and the second by the use of ergotine and the arseniate of strychnine. Hæmatemesis, the most important complication of this disease, should be treated with three granules of ergotine every quarter-hour, or by suitable hypodermic injections of the same agent.

SPLENITIS.	DOMINANT		Aconitine, ergotine, arseniate of strychnine.
	VARIANT.	Paludal infection	Arseniate of soda, arseniate of quinine.
		Hæmatemesis	Ergotine.

Stomatitis, Aphthous (*Aphthæ*).—The nature of this disease is still imperfectly known. It may be that the ulcerations of the mouth are due to a herpetic eruption analogous to herpes of the skin, or they may be due to infection of the mouth, and sometimes the entire gastro-intestinal tract, by a parasitic element of unknown nature. The discrete variety of aphthæ appears to be only an attenuated and sporadic form of the confluent variety, the latter always possessing a certain degree of gravity, and sometimes appearing as an epidemic. The sulphide of calcium, whether as an antiherpetic or an antiparasitic agent, should be used in preference to other means in all cases of aphthous stomatitis. The granules may be dissolved in the mouth, in order to take advantage of their topical effect, unless there are some contra-indications to such practice. Under the latter condition a few granules of salicylate of soda or of salicylic acid may be used instead. The sulphide may be administered in doses of one or two granules every hour or every two hours. For the fever we should give a granule of aconitine every hour; we will also obtain its local action upon the heated and hyperæmic mucous membrane by allowing the granule to dissolve in the mouth. The same effect may be obtained by allowing two granules of cocaine to dissolve in the mouth every hour, and their anæsthetic effect will facilitate secretion or mastication. For the severe pain of this disease two granules of codeine or morphine may be given every half-hour, either for its topical effect or as a general analgesic. Though there may be salivation, it is not usually so decided as to be troublesome to the patient. Should it become so we may give one granule of hyoscyamine every half-hour. Adynamia, which is present only when the aphthæ are confluent or secondary, should be treated with two granules of sulphate of quinine every hour, or with one of phosphoric acid every two hours. The digestive troubles, which almost always precede or accompany the aphthous eruption, should be treated with a small spoonful of Sedlitz Chanteaud every morning, and two granules of quassine every three hours, together with a few swallows of some alkaline mineral water. Should the vesicles be opened, they leave ulcerations which usually cicatrize rapidly. In some cases, however, the reparative process is a slow one, and then it is well to allow two granules of tannic acid or iodoform to dissolve in the mouth every two or three hours. Aphthæ which are the result of general diseases indicate primarily the treatment of those diseases, the cause being thus removed.

APHTHÆ.	DOMINANT.	Parasitic element	Sulphide of calcium.
	VARIANT.	Fever	Aconitine.
		Buccal irritation	Cocaine.
		Pain	Codeine.
		Salivation	Hyoscyamine.
		Adynamia	Sulphate of strychnine.
		Digestive troubles	Quassine, Sedlitz Chanteaud.
		Ulcerations	Tannic acid.

Stomatitis, Catarrhal (*Simple or Erythematous*).—The causes of this condition are numerous, but, whatever they be, they must be suppressed, as well to obtain a prompt cure as to avoid recurrences, which are always liable to occur as long as the cause persists. Usually simple idiopathic stomatitis results from the presence of an irritating body—for example, dentition, dental caries, etc., or from a gastric catarrh which has extended to the buccal mucous membrane. Stomatitis has for its essential process, therefore, the inflammatory one. The dominant should consist of one granule of aconitine every two hours, which may be dissolved in the mouth in order to utilize its topical effect. Cocaine, by virtue of the anæmiating effect which it has upon tissues with which it comes in contact, may be equally useful. Three granules of it may be given at once, and they should be held in the mouth as long as possible, in order to obtain the full benefit of their local effect. The drug should be given every hour or every two hours, according to the severity of the case. Pain and burning in the mouth may be relieved by allowing two granules of codeine to dissolve slowly in the mouth every half-hour. For the fever, which is usually ephemeral and not very intense, we should give one granule of aconitine every half-hour until defervescence occurs. Should ptyalism become excessive, it may be modified by using one granule of hyoscyamine every three hours. If gastric disorder is present Sedlitz Chanteaud should be used; it may be that the stomatitis is only a manifestation of the gastric trouble.

SIMPLE STOMATITIS.

DOMINANT.	Inflammatory element	Aconitine, cocaine.
VARIANT.	Pain	Cocaine.
	Fever	Aconitine.
	Ptyalism	Hyoscyamine.
	Gastric disorder	Sedlitz Chanteaud.

Stomatitis, Mercurial.—When mercury is eliminated by the salivary glands, stomatitis of greater or less severity results from inflammation of the mucous membrane after the process has attained a certain degree. The most useful means for treatment are those which favor the elimination of the mineral by stimulating the salivary, urinary, enteric, and cutaneous secretions. For this purpose chlorate of potash has a reputation which is unquestionable. It should be given in doses of four to eight grammes daily, dissolved in two hundred to three hundred grammes of water, and taken in small doses every two hours. Five granules of nitrate of pilocarpine four times daily will furnish a suitable substitute for the potash salt, if for any reason the latter is contra-indicated. Sedlitz should be taken every day to increase the elimination by the kidneys and intestines. The pain may be soothed by using three granules of cocaine every half-hour dissolved in the mouth or dissolved in a teaspoonful of water before they are taken. In addition to its analgesic action, the cocaine will rapidly relieve the tissues of their congestion, and by this means also the local pain will be relieved. The dryness of the mouth will be lessened by dissolving in it one granule of aconitine every two hours. Ulcerations which are slow to cicatrize should be touched with perchloride of iron in strong solution, or with the solid stick of nitrate of silver. Ptyalism, which is not only annoying but a decided source of weakness, may be relieved by using one granule of sulphate of atropine or one of hyoscyamine every two hours. The fever, which sometimes is very high, may be moderated by using one-granule doses of aconitine, the intervals to be regulated by the elevation of the temperature. The fetidity of the breath may be overcome by chewing one or two granules of iodoform every two hours, which, in addition to its local antiseptic action, has a very useful tendency to facilitate the elimination of the mercury. The anorexia and difficulty in masticating call for the exclusive use of liquid or semi-solid food. Two granules of quassine given four times daily may remedy this difficulty. The diarrhœa should not be interfered with unless it is compromising the strength of the patient; in that case, two or three granules of the hydriodate of morphine should be given every two hours. Mercurial stomatitis is followed by a condition of profound anæmia, which may be remedied by the use of the incitants of vital force and pills of the iodide of iron. An essential condition to the success of this treatment manifestly consists in a suspension of the use of mercury. The mineral may gain access to the interior of the body through the skin, the digestive organs, or the respiratory apparatus. Poisoning may be due to one's occupation, to medical treatment, or to accident. As a preventive plan we should use mercurials only in small doses and with occasional intermissions, the condition of the gums being frequently examined so that treatment may be suspended if necessary, or, at least, so that chlorate of potash may be combined with the mercury. The use of the potash salt is not without disadvantages, for by concealing the first effects of mercurial intoxication it causes us to run the risk of passing the stage in which the toxic effects are curable, and, besides, deprives us of one of the best means which can be used to combat hydrargyrism. In fact, when the chlorate of potash is impotent to prevent the manifestation of mercurial stomatitis, its impotence will persist when mercurial poisoning has actually occurred. It would seem to be better to allow very active substances to produce their proper effect at the suitable time rather than to arrest or obscure its appearance, and so deprive us of that information which is necessary that we may know when to suspend their use.

MERCURIAL STOMATITIS.	DOMINANT.	Elimination of mercury	Nitrate of pilocarpine. Chlorate of potash. Sedlitz Chanteaud.
	VARIANT.	Pain	Cocaine.
		Dryness of the mouth	Aconitine.
		Ulcerations	Topical use of perchloride of iron or nitrate of silver.
		Ptyalism	Hyoscyamine.
		Fever	Aconitine.
		Fetid breath	Iodoform.
		Anorexia	Quassine.
		Diarrhœa	Hydriodate of morphine.
		Anæmia	Iodide of iron.

Stomatitis, Pultaceous (*Muguet*, *Athrepsia*).—The nature of this disease is now well known. It is due to the growth of *Oïdium albicans* in a medium which is favorable to its development. One of the necessary conditions to its culture is a medium which has an acid reaction, and, as the buccal mucous membrane in badly nourished children has an acid reaction, the same being true with all persons whose digestive functions and nutrition in general are not up to the normal standard, *muguet* is developed primarily in children at the breast, and secondarily in adults who are more or less cachectic. In most cases this form of stomatitis has a grave prognosis, for it indicates that there is a decided disturbance of nutrition in those who are its subjects. It is believed that *Oïdium albicans* is transmitted only by contact, which is an argument in favor of the plan of treatment which is here advised. There are two fundamental indications in this disease: one is suggested by the conditions of receptivity, the principal of which is a diminution in the vitality; the other is responsible to the parasitic character of the morbific agent, which compels us to have recourse to the parasiticides. In the first case, we should give, to small children, one granule of brucine three to five times daily; to adults, two granules of the arseniate of strychnine three to five times daily. After taking the granules, one should take a swallow of some alkaline mineral water, or they may be dissolved in such a medium before being taken if the age of the child indicates that they be taken in solution. The second indication should be satisfied with sulphide of calcium as a topical antiparasitic agent, three to five granules being taken after meals, and oftener if necessary, dissolved in an alkaline water or in the oil of sweet almonds. For adults, two granules may be given from time to time, being either chewed or dissolved in the mouth. This remedy may be taken without hesitation, and it will assist the local treatment. *Muguet* of the œsophagus, stomach, and intestine especially will be benefited by this treatment. Salicylic acid and the salicylates may be used instead of the sulphide of calcium, but the latter is to be preferred. The buccal catarrh which precedes the appearance of the pultaceous patches should be treated, from its beginning; with half a granule of aconitine (for infants at the breast) every two or three hours. Aconitine may also be given in solution in order to utilize its local action. The nitrate of pilocarpine, which is eliminated by the salivary glands, is also a very useful remedy, for it has a favorable influence upon the cause of the disease, and facilitates the healing of the ulcerated patches. One granule should be given every two hours. Irritation and pain in the mouth, which often act as an obstacle to suction and to the swallowing of the milk, may be relieved by two granules of cocaine every two hours, dissolved in a spoonful of water. Vomiting and diarrhœa will rapidly weaken children, and thus increase the morbid receptivity. Brucine and codeine are the most suitable agents for this condition, especially if the children are naturally robust, one granule of each being given every three hours. If the children are feeble, two granules of the salicylate of soda or of iron may be given in preference every three hours. The choleriform condition, which is characterized by fluidity and great frequency of the stools, by rapid emaciation and chilliness of the surface of the body, should be rigorously treated with the hydrochlorate of morphine, the doses being carefully regulated by the age of the patients. For children under two months of age, half a granule may be given every two hours; for children of two years or under, one granule every three hours. Circum-anal erythema, which is caused and aggravated by the alvine evacuations, may be relieved by applications of vaseline or a solution of tannic acid, five granules being dissolved in a little water, and thus applied to the irritated surface. Cutaneous ulcerations indicate a grave condition with respect to nutrition and assimilation, and depend less upon *muguet* than upon an abnormal condition which Parrot has termed *athrepsia*. For this condition we should give tonics internally, and apply iodoform and bismuth in equal parts externally. The hypothermia which is the ordinary accompaniment of choleriform diarrhœa, but which may also occur alone, should be treated with one granule of phosphoric acid every two hours, or with external means for exciting peripheral vitality, such as warm baths, sinapisms, etc. Ordinary hygienic precautions must be thoroughly carried out, and particularly must cleanliness of the mouth be insisted upon.

PULTACEOUS STOMATITIS.	DOMINANT.	*Oïdium albicans* . .	Sulphide of calcium, salicylates.
		Lowered vitality . .	Brucine, arseniate of strychnine.
	VARIANT.	Buccal catarrh . .	Aconitine, nitrate of pilocarpine.
		Buccal irritation . .	Cocaine.
		Vomiting and diarrhœa	Brucine, codeine.
		Choleriform condition .	Hydrochlorate of morphine.
		Erythema around the anus	Tannic acid.
		Cutaneous ulcerations .	Iodoform.
		Hypothermia . .	Phosphoric acid.

Stomatitis, Ulcero-membranous (*Stomacace, Noma, Gangrenous Stomatitis, Pseudo-membranous Stomatitis, Ulcerative Stomatitis, Diphtheritic Stomatitis*).—Ulcerative stomatitis, by its epidemic and contagious properties, by its prodromic signs and well-defined localization, must be regarded as an infectious disease, the agent of which is still undiscovered. The infectious element must be combated with two granules of the sulphide of calcium every half-hour dissolved in the mouth, unless the patient's repugnance to the disagreeable taste can not be overcome. If the fever is high, a granule of aconitine may be given every hour, combined with arseniate of strychnine, that the defervescent effect may not be too depressing. If the fever is of slight intensity, and is attended with remissions, three granules of the salicylate of quinine every half-hour should be preferred. The pain in the cheeks, which is sometimes severe, may be quieted with three granules of codeine in solution every two hours. The fetid condition of the breath, which is sometimes suggestive of gangrene, may be modified by chewing two granules of iodoform every hour. One granule of atropine every three hours will relieve the ptyalism. Adenopathy pertaining to the submaxillary and parotid glands shows the infectious character of the buccal lesion, and indicates in the one case a favorable, in another an unfavorable progress of the disease. Should it be terminated by suppuration, iodoform may be given to hasten the resolution of the glandular engorgement. Ulcerations should be treated locally or internally with chlorate of potash, the influence of which upon the process of cicatrization is decided. Teaspoonful doses may be given of a solution of four to eight grammes in two hundred grammes of water. For the anorexia three granules of quassine may be given three or four times daily. The alimentation of the patient must be reparative in character, in order to anticipate and prevent adynamia, which often occurs in connection with this disease. When the strength is beginning to fail, or even from the beginning of the disease, two granules of the hypophosphite or the arseniate of strychnine should be given every three hours. Proper hygienic regulations play an important part in effecting a cure of this disease. Pure air and isolation of the patients are indispensable to rapid and certain recovery.

ULCERO-MEMBRANOUS STOMATITIS.	DOMINANT.	Infectious element	Sulphide of calcium.
	VARIANT.	Fever	Aconitine, salicylate of quinine.
		Buccal pain	Codeine.
		Fetid breath	Iodoform.
		Ptyalism	Sulphate of atropine.
		Adenopathy	Iodoform.
		Ulcerations	Chlorate of potash. Nitrate of pilocarpine.
		Anorexia	Quassine.
		Adynamia	Arseniate of strychnine.

Syphilis.—To some writers syphilis is a disease the ultimate cause of which is unknown; to others, the disease is due to an infection of the organism by a microbe (coccus), which has been carefully investigated by Marcus and Tornéry. It is an unquestionable fact, however, that the cause of syphilis may be treated successfully with mercury. Therapeutics, convinced of the efficiency of the mercurials for neutralizing the syphilitic virus, is as efficient as it is empirical in its action, or, looking at the matter from another standpoint, it conforms itself to the course which is imposed upon it by the existence of a particular microbe. The dominant of the treatment is, therefore, clearly indicated. In every period of the disease mercury is useful, and constitutes the basis of the best plans of treatment. In tertiary syphilis, however, iodine seems to be preferable, either because it gives new activity to the mercury which has already been introduced into the system, or because, by actively modifying the nutrition, it causes a morphological regeneration of the diseased tissues, or because it has in its turn a particular action upon the specific infection at this period in the history of the microbes. Various methods of introducing mercury into the system have been tried. The endermic and the dermo-pulmonary methods should be rejected, because they do not admit of graduation of the doses, which is an important point in the treatment. The only methods which should be accepted are those in which the medicaments are administered by the mouth or hypodermically. The first is the milder, and is generally the more acceptable to patients. It should be preferred except in cases in which the digestive organs will not tolerate it, or the urgency of the case demands the use of the subcutaneous method. Dosimetry makes use of three compounds of mercury —calomel, the protiodide, and the biniodide, the last two being used in almost all cases. Iodoform, either alone or combined with one of these salts, will be found very serviceable in the tertiary period. Mercurial treatment should be commenced as soon as one is certain that syphilitic infection has occurred, conclusive evidence being furnished by a chancre or the specific roseola. We should at once give the protiodide in doses of five granules two or three times daily. They should be taken with the meals or in milk, to prevent disturbance of the digestive organs, in all cases in which a prompt modification of the disease is demanded, or in which the patient, too much influenced by the primary lesions, has not the patience to await the effects of long-continued treatment. In other cases smaller doses may be given, the treatment being continued a long time; two granules three times daily will suffice. Should the protiodide cause gastro-intestinal disturbance, it may be replaced by the biniodide in similar doses. Should the intolerance persist, two granules of the hydrochlorate of morphine or three of codeine may be given with each dose of mercury. This plan of treatment will generally suffice for all cases of syphilis. The difficulty is in continuing it a sufficiently long period of time. The author objects to interruptions in the treatment, believing that it is better to continue until a complete cure has been obtained, unless one is compelled to discontinue for a while to avoid the physiological effect of the mercury. Iodoform should be given in doses of three to ten granules three times daily in those cases of tertiary syphilis in which mercury is inappropriate. If iodoform can not be given continuously, it may be alternated with iodide of potassium in solution, taken in milk. The solution should contain:

℞ Aquæ destil....................	250 grammes.
Potass. iod....................	15 "

A large spoonful may be taken at suitable intervals in a swallow of milk, the quantity of the solution being gradually increased to the limit of toleration. Among the many accidents accompanying syphilis, a few may be mentioned which call for particular treatment in addition to the dominant. Syphilitic iritis is frequently accompanied with photophobia and violent periorbital pains, which are a source of great distress to the patient. For this symptom a granule of daturine should be given every hour until relief is obtained. Even should the iritis be unaccompanied by such disagreeable symptoms, its cure may be hastened by adding one or two granules of hyoscyamine to each dose of the mercurials. The osteocopic pains must be treated with iodoform and iodide of potassium, and, for the variant, with three granules of the hydriodate of morphine every half-hour during their continuance. The disappearance of the papules and the ulcerations may be hastened by local applications of Van Swieten's solution, or of a solution of ten granules of the protiodide in a little water. Buboes should be treated during the febrile stage by defervescents. During the stage of suppuration they may be dressed with glycerole of phenic acid; while the patient may take for internal treatment two granules of arseniate of soda and two of iodoform four times daily. The infecting chancre should be dressed with iodoformized ether, 5 : 100, especially if it shows any irregularities of contour. If the bottom of the ulcerated surface is regular, iodoform or calomel in powder may be applied. The soft chancre requires scrupulous cleanliness, and, if cicatrization is delayed, tannic acid or sulphide of calcium in powdered form. Anæmia, which is of frequent occurrence in syphilitic patients, should be treated with quassine and the arseniate of strychnine. The same treatment would be appropriate if the chancre were phagedenic; but this form usually occurs only in broken-down constitutions, in which the suffering has been of long duration or the treatment has been unsuited to the case. Cerebral syphilis requires a particular form of treatment on account of its gravity and the rapidity with which its phenomena are developed. Hypodermic medication must be used in this form of the disease, the injections being made deeply into the cellular tissue. The following formula should be used:

℞ Peptoni (Catillon) in pulv....	0·30	gramme.
Ammonii chlor. puri.........	0·30	"
Hydrarg. bichlor............	0·20	"
Glycerinæ...................	5·00	grammes.
Aquæ destil.................	15·00	"

Each injection should contain ten milligrammes of the mercurial salt.

If for any reason this method can not be used, three granules of the protiodide should be given every half-hour, the interval being gradually increased as an effect is produced, and the treatment being continued until all danger is over. All the differential characteristics of the lesions of this disease, which can distinguish them from similar lesions in other diseases, should be carefully studied by the physician. They are often very obscure, and their true character may only be discovered by their destructive action, or their resistance to all forms of treatment until the specific one is employed. In women the primary infection may be kept secret, or it may be that inoculation has been so slowly followed by constitutional disturbance that serious disease has not been suspected. In some cases the disease is associated with disorders of the nervous system, and in others by other phenomena; in all cases, however, the disease does not yield until the treatment which is appropriate to this disease is used.

SYPHILIS.	DOMINANT.	Infection by the coccus of syphilis	Recent	Protiodide and biniodide of mercury.
			Long standing	Biniodide of mercury and iodoform.
	VARIANT.	Intolerance of the digestive organs		Codeine, hydrochlorate of morphine.
		Iritis	Photophobia	Daturine.
			Neuralgia	Valerianate of atropine.
			Myosis	Hyoscyamine.
			Conjunctivitis	Aconitine.
		Osteocopic pains, nocturnal paroxysms, with insomnia		Hydriodate of morphine.
		Adenitis	Fever	Aconitine, hydroferrocyanate of quinine.
			Suppuration	Arseniate of soda. Iodoform.
		Cerebral syphilis		Active internal treatment. Hypodermic injections of the ammoniacal peptonate of mercury.
		Anæmia		Quassine, arseniate of strychnine.

Tetanus.—The lesion of innervation by which the reflex excitability of the cord is increased, and which is known in pathology under the name of tetanus, is not yet sufficiently understood as to its pathogenesis to enable us to thoroughly understand its nature. The study of its various causes only enables us to arrive at the conclusion before mentioned, and upon that we shall base the dominant indication, which is to soothe and diminish the irritability of the cord, the center which receives the particular irritation transmitted by the injured nerve, and from which the impulses to the convulsions that are characteristic of tetanus proceed. If the receptive condition of the central organ could be abolished or sufficiently repressed, the reflex contractions would cease, and the disease would then be reduced to the morbid work localized in the injured peripheral nerve. If we are not able to cure the disease, we can at least arrest its progress and eliminate the principal symptoms. In attempting to accomplish this end, we should use persistently four granules of the bromide of camphor every hour, or every half-hour if the case is very severe or very rebellious, adding thereto the medicaments which are indicated by the variant. Thus, when the pain becomes very severe, whether it be due to the contractions or be located in the injured nerve, two granules of cicutine or the hydrobromate of morphine should be added every half-hour. Violence and frequent repetition of the convulsions should be repressed with antispasmodics and musculo-paralyzants. Two granules of hyoscyamine, croton chloral, and veratrine should be given every hour until the desired effect is obtained. Veratrine will also modify the excess of heat, and hyoscyamine will overcome the constipation. For the hyperthermia we should give one granule of aconitine every hour as long as the temperature is not above 39° C., and every half-hour when it exceeds that point. Congestion should be treated by the same means; when it is due to fatigue or ataxia of the heart, a granule of digitaline should be added every hour until the pulse becomes regular. Paralysis, the most frequent forms of which are those which affect the bladder and rectum, should be treated with one granule of the arseniate of strychnine and one of phosphoric acid every two hours. For constipation, which is sometimes very obstinate, five granules of podophyllin should be given with a teaspoonful of Sedlitz Chanteaud three or four times at intervals of half an hour. In some cases the paroxysms are more or less periodic in character, indicating three granules of the hydrobromate of quinine every hour. If the condition of the patient is such that the regular administration of the medicaments is not possible, we must seek to soothe him by such means as will permit the application of the treatment. The prolonged use of electricity and the employment of enemata of hydrate of chloral may be of service in inducing a remission, advantage of which must be at once taken by beginning a systematic attack upon this terrible disease.

TETANUS.	DOMINANT.	Exaggeration of nerve irritability . .	Bromide of camphor.
	VARIANT.	Pain	Hydrobromate of morphine. Cicutine.
		Convulsions . . .	Hyoscyamine, croton chloral.
		Hyperthermia . .	Aconitine, veratrine, digitaline.
		Congestion . . .	
		Paralysis . . .	Arseniate of strychnine, phosphoric acid.
		Constipation . .	Sedlitz Chanteaud, podophyllin.
		Intermittence of the paroxysms . .	Hydrobromate of quinine.

Tuberculosis.—See Tuberculous Disease (under *Disease*).

Ulcer, Gastric.—Ulcer of the stomach may be due to different causes, all of which are reducible to atony of the organ or to a want of nutritive force. At the beginning, such ulcerations present nothing peculiar; subsequently they become round and perforating, this peculiarity being given to them, according to many pathologists, by the action of the gastric juice, which corrodes the submucous tissues by means of its digestive properties. The dominant will consist, therefore, in augmenting the vitality of the mucous membrane, on the one hand, by means of the excito-motors, one or two granules of strychnine or two or three of brucine being given three times daily; and in neutralizing, on the other hand, the digesting action of the gastric juice. Unfortunately, it is not easy to satisfy this second indication. Physiology has not yet discovered any substance which can prevent the action of the gastric fluid, and we know that it covers the mucous membrane to a greater or less degree, even if there is no food in the stomach to excite its secretion, as after a prolonged fast. The alkalies produce slight results, and only when taken in large doses do they modify the composition of the gastric juice. This is an obstacle to their use, for patients who suffer from this disease are usually in a state of profound anæmia, which is a contra-indication to the extensive use of alkalies. We are therefore restricted to a limited diet—for example, a diet of milk—food being taken by the mouth only at long intervals. Such a plan of alimentation may be supplemented by means of rectal enemata of peptone if they can be tolerated. The restrictive action of atropine upon the secretions may be used to diminish the secretion of gastric juice, this agent responding also to other important indications of the variant. For example, it will relieve epigastralgia, the pathogenesis of which is uncertain, but which seems to be due principally to the irritant action of food upon nerves which have been laid bare in the course of the ulcerative process, and to their lengthening and compression in consequence of the peristaltic movements of the stomach. Three granules of the hydrochlorate of morphine every quarter-hour, associated or alternated with one of the sulphate of atropine every half-hour, will usually relieve the severity of the pains. These anodynes should be frequently changed in order to retain their usefulness. It is important that the patient be relieved, because the frequency, the duration, and the intensity of the gastralgia are causes which concur in inducing cachexia. In some cases the absence of pain implies absence of vomiting as well, and in these the food which is taken does not produce an excessive degree of distress. As alternates to morphine, one may give three granules of cocaine, three of codeine, or two of cicutine every half-hour until relief is obtained. Vomiting may also be treated by the means which have just been referred to. Gastrorrhagia or hæmatemesis may be treated with five granules of ergotine dissolved in a little cold water every quarter-hour, or hypodermically with a ten-per-cent. watery solution of the same agent. Melæna of a temporary character is evidence of gastrorrhagia which has already been brought under control, and therefore does not require the use of hæmostatics; but, if it should be repeated, ergotine must be given for several days, for we are ignorant of the precise cause for the extravasation of blood, and, besides, such losses are of serious importance to the patient in his debilitated condition. Five granules of ergotine should be given, therefore, at intervals of three hours. The anæmia, which is almost always present when the disease is far enough advanced to be diagnosticated, on account of the changes in the digestive apparatus, should be treated with the lactate, the arseniate, or the perchloride of iron. Quassine may be indicated if it is necessary to stimulate the appetite, or to gently incite the stomach to contractility. Constipation, which adds to the discomfort of the patient, and may also induce attacks of gastralgia, should be treated with three to five granules of podophyllin every evening, or ten of euonymine once or twice daily. Hygienic precautions must also be enforced for a long time.

GASTRIC ULCER.	DOMINANT.	Action of the gastric juice	Alkalies.
		Vascular atony	Strychnine.
	VARIANT.	Epigastralgia	Morphine, hyoscyamine.
		Vomiting of food	Morphine, atropine.
		Hæmatemesis	Ergotine, ice.
		Anæmia	Salts of iron.
		Melæna	Ergotine.
		Digestive disorders	Quassine.
		Constipation	Podophyllin.

Urethritis and Vaginitis.—Urethritis may be simple or virulent. Simple urethritis is established in the same way as any other inflammation of mucous membrane, with this difference, that it lasts longer on account of the repeated aggravation which is due to the passage of the urine. It may be treated at the beginning like any other catarrhal inflammation, with aconitine in doses which should be governed by the violence of the inflammatory process and the febrile state. The character of the urine must be changed in order that it may offer the slightest possible hindrance to the cure of the disease. To accomplish this end three granules of benzoate of soda or of benzoic acid should be taken after each micturition, and alkaline waters should be used for ordinary drinking purposes. The use of external emollients must not be neglected in the first or acute stage of the disease. Painful erections should be treated with the bromide of camphor every half-hour, and spasm at the neck of the bladder with one granule of hyoscyamine every two hours, or oftener if there is true dysuria. After the first period, if the blennorrhagia continues, three granules of cubebine should be given after each micturition, and in chronic cases two granules of piperine four times daily. Arbutine and helenine are also useful means for relieving the blennorrhagic discharge. Either of them should be given in doses of three to five granules three to five times daily. With persons of lymphatic diathesis urethritis may easily become chronic and rebellious to all direct treatment. In order to obtain a result promptly in such cases the general nutrition must be modified by means of an analeptic diet and the prolonged use of two granules each of arseniate of iron and iodoform, three times daily. Virulent urethritis is due to contact with a parasite which bears the name of *gonococcus*. It should be attacked locally with injections of permanganate of potash (one half gramme to one gramme in one hundred grammes of water), or with three granules of sulphide of calcium (repeated with sufficient frequency), triturated in the fluid portion of each injection. Chronic gonorrhœa should be treated locally with injections of lactate of quinine (1 : 100), or with tannic acid in solution, three granules being dissolved for each injection. Subacute or chronic vaginitis should be treated with the same means, the local treatment being slightly varied. Tampons of charpie or of cotton-wool should be introduced into the vagina, soaked with one of the following solutions, viz.:

℞	Chloral hydrate.........	1 gramme.
	Aquæ destil............	100 grammes.
℞	Resorcin...............	1 gramme.
	Aquæ destil............	100 grammes.

℞ Tannin.................. 6 grammes.
Glycerinæ.............. 100 grammes.

The doses of these agents must be gradually increased until the disease is brought under control, and then as gradually diminished to prevent recurrence.

BLENNORRHAGIA FROM URETHRITIS OR VAGINITIS.

SIMPLE.

Acute	Dominant		Aconitine.
	Variant	Fever	Aconitine.
		Erections	Bromide of camphor.
		Irritating urine	Benzoates and alkalies.
Subacute or Chronic	Dominant		Cubebine, piperine, arbutine, helenine.
	Variant	Spasmodic dysuria	Hyoscyamine.
		Dysuria from closing of the canal.	Elastic sounds.
		Lymphatic diathesis	Arseniate of iron, iodoform.

VIRULENT.

Acute	Dominant	Injections of permanganate of potash. Injections of sulphide of calcium.
	Variant	The same variant as in simple acute blennorrhagia.
Subacute or Chronic	Dominant	Injections of lactate of quinine. Injections of tannic acid.
	Variant	The same as the variant in simple chronic blennorrhagia.

Uterus, Cancer of the.—When degeneration of the tissue of the neck or the body of the uterus is established, not much can be done in the way of restoring them to their normal condition. While we understand that a cure is possible, we are ignorant of the means by which it may be obtained. We should therefore concentrate our attention in order to find a suitable plan of preventive treatment for women who are predisposed, whether by hereditary influence or by a metritis of long duration, to this disease. Means which favor assimilation, which make the blood more plastic, and the functions of the nervous system more perfect in their action, should be perseveringly employed to accomplish this end with any and all in whom a tendency to this disease is suspected. Arseniate of soda, arseniate of strychnine, iodoform, and ergotine are the agents which must be introduced into the body in order to modify the diseased tissues, and the vitality which gives them their abnormal existence. Hydrastine has seemed to be effective in delaying the progress of degeneration in some cases, when given for long periods of time. It may be used in doses of four granules, three times daily, combined with or alternated with iodoform and arseniate of soda. The hæmorrhages must be controlled by using three granules of ergotine every quarter-hour, or by applications of dilute perchloride of iron. The pain, which is sometimes intolerable, may be modified by using two granules of cicutine hourly, or two of gelsemine every half-hour, or two of hydrochlorate of morphine every quarter-hour. It is well to change the narcotic from time to time, in order to avoid multiplying the doses. For the anorexia two or three granules of quassine or piperine should be given before meals. The fetid character of the discharges may be overcome by injections of permanganate of potash (20 : 500). For the diarrhœa three granules of brucine and three of the hydrochlorate of morphine should be given every two or three hours. Similar doses of tannic acid may be substituted for the alkaloids, if they are required at very short intervals. In the first period of the disease some results may be expected from this treatment, but after it has reached a certain stage of development we must be contented with simply a palliative treatment.

CANCER OF THE UTERUS.	DOMINANT.	Cancerous degeneration	Hydrastine.
		Dyscrasic state of the secretions . . .	Iodoform, arseniate of soda.
		Hypertrophy . .	Ergotine.
	VARIANT.	Hæmorrhage . .	Ergotine.
		Pain	Gelsemine, cicutine.
		Anorexia . . .	Quassine.
		Fetid discharges . .	Disinfectant injections.
		Diarrhœa . . .	Brucine, morphine, tannic acid.

Vaginitis.—See Urethritis.

Variola.—"Everything has been said in respect to variola, and yet everything still remains to be said. In fact, with regard to its etiology, our ignorance is complete. Are *bacteria* or *vibriones* its cause or its effect? That is the question." With the foregoing words Burggraeve begins some observations upon an article on variola, written by Hahn, of Marseilles. The great pathogenic and therapeutic question of the day concerns variola. Few are the diseases for which we possess certain and effective remedies; some of them are treated by us with agents, the action of which is unknown to us; in others the treatment is a rational one, and is founded upon clear and well-defined pathogenic indications. If, therefore, we subtract those diseases in which the treatment is of a specific character, the diseases which remain can be treated in only two ways —that is, by having regard either to their etiological or their symptomatic indications. Dosimetry frequently makes use of symptomatic therapeutics in the absence of the pathogenic variety, but its aim is always to seek to replace the first by the second, which follows a surer and a clearer way. The treatment of variola up to the present time has been symptomatic rather than really pathogenic, because the pathogenesis is still deficient as to the clearness which is necessary to furnish unquestionable indications. It is not designed in this place to presume to solve the doubts of the pathologists in regard to the nature of variola, nor to justify the opinion of Hallier or Lebert by individual microscopical investigations, and give an opinion as to the vegetable or animal nature of the microbes to which the origin of the contagion is attributed. If, however, we compare the results obtained from the culture and inoculation of microbes with the phenomena which occur in variolous patients, we are compelled to admit the analogy which exists between these two classes of facts, and, supporting ourselves upon the principles of experimental philosophy, so admirably demonstrated by the immortal Claude Bernard, to admit, in addition, the parasitic nature of the primordial cause of the disease, for which we shall seek to establish in this chapter a rational plan of treatment. The pathogenic indication rests, therefore, in the choice of an agent which is able either to destroy the micrococcus of the disease, or to furnish to or remove from the organism a substance which will render it unsuitable for the culture of bacteria or the germination of inoculated spores. Besides, as the evidence of contagion is manifest only after the development of the first germs, it is necessary to find an agent which is sufficiently diffusible to penetrate all the elements of the body, and attack each individual microbe. The compounds of sulphur, which have a well-known antizymotic power and are very diffusible, are certainly the most appropriate agents for combating the invasion of the bacteria of variola. The results obtained by Fontaine in the treatment of diphtheria, and by Henrique Gabaldon in the treatment of aphthous stomatitis, have suggested the idea of using sulphide of calcium as the dominant in variola. The great power of this agent as a bactericide can not be denied, and it was introduced, or, at any rate, popularized, by the adherents of dosimetry. The results which the author has obtained have been so satisfactory that he thinks he is justified in using them as an argument in favor of the parasitic nature of the efficient cause of this disease. *Naturam morborum ostendit curatio* (Treatment reveals the nature of diseases). Up to the present time, alike in the most severe and the most benign cases, the physician is compelled to admit the impotence of his means of treatment. The belief in fatalism has not yet disappeared from the field of medical science. It is still believed that it is impossible to diminish by a single day the prearranged duration of diseases. Patients with variola are told that they must traverse a certain number of periods of so many days each, and therapeutics thus seems to sustain the popular proverb which affirms that there is scarcely a day's difference between the duration of a disease which is treated and one which is left to itself. And one must not say that we can at least act upon the complications of diseases, and bring them to a happy end, even if we can not intervene in respect to duration. There is no proof of this, and such a capability by the side of the incapability referred to would be a plain absurdity. He who can guide a runaway horse ought also to be able to check and stop him. The author disagrees entirely with this profession of medical nihilism, which first gives birth to and then sustains an irrational and routine system of therapeutics. Now that science has other means, and is making other discoveries, we are especially happy in announcing the good news. Our colleagues are supplicated to abandon the unhappy skepticism to which they have hitherto been condemned, and our patients are assured that therapeutics has ceased to be a myth; for them, also, the days of fatalism have disappeared. The following remarks will have particular reference to the treatment of variola. The empirical and exciting remedies gave way to those which, it is true, were inoffensive, but they were also useless. Preparations of quinquina, opium, and alcohol were replaced by infusions of violets, of linden, and of saffron. It is difficult to say why the latter should be preferred to the former. Both varieties, used without confidence and without reason, have no other object but to amuse the imagination of the patient and calm the impatience of his family, and respond neither to any scientific indication nor to the obligations of conscience on the part of the physician. And thus one goes from one experiment to another, from a fruitless attempt to a discouraging disillusion, and then to skepticism, all of which is not only a crime for the present of the medical profession, but is also a peril for its future. Faith, like incredulity, is contagious, and, when this incredulity penetrates the public mind, it takes the name of science, which is able to struggle against charlatanism only when there remains to it, in default of charity, a little faith and a glimmering of hope. The certainty of success, which the author believes is possible by interfering in the course of variola with certain medicaments until the disease is aborted, makes it a duty with him to insist minutely upon the way in which the dominant should be applied. In order that a plan of treatment may be perfect, it must fulfill two conditions, viz., it must be rational and it must be effective. Common sense will decide as to the first, and the facts in the case will demonstrate the second. To decide whether a therapeutic application is rational, it is necessary to know, first, the nature of the disease; second, the natural properties or the physiological effects of the remedy which is being used. We ought therefore to have clearly in mind the essential cause of variola, and the effects produced upon it and upon the organism by the sulphide of calcium, a substance to which the preference which it deserves is now accorded, after various experiments of a comparative nature. Variola is a disease which is caused by very minute organisms or their germs, which are free in the atmosphere, and circulate around man in great numbers. Man is exposed to infection from them, as they are in contact with his epidermis, by absorbing them with his food or with the air which he respires. Whether these organisms traverse the intact integument or take advantage of a solution of continuity to penetrate the tissues, it is certain that in order to multiply they must have particular conditions of temperature and chemical combination, in default of which they die. The union of these conditions which are essential to the life and propagation of the parasites of variola is termed receptivity. Just as certain seeds will germinate only in the presence of certain meteorological conditions and in certain soils, so organic receptivity is necessary in order that the introduction of morbific germs be followed by disease. This explanation furnishes the key to the contagious and infectious properties of disease, and also shows us why everybody is not attacked by the disease, why vaccine is useful, and why the disease seldom attacks the same person twice. Vaccine and variola, by changing the fluids of the body more or less fundamentally, render it less susceptible to a second attack, the first parasites having absorbed certain elements which furnish their natural alimentation. This is the reason why certain plants can not be cultivated successfully several years in succession in the same soil, the first cultures having absorbed all or nearly all the existing material which is essential to their germination and development. The germ having been introduced into an organism in which it finds a medium suitable for its existence, quickly multiplies with the exuberance which is peculiar to all these minute beings, which seem to seek in their marvelous facility in reproduction a compensation proportional to the smallness of their size. It is during this period of incubation that it would be easy to eliminate the disease, if we had the means for destroying all the ovules. But as the organism does not complain, and gives no indication of what is going on in the depths of its tissues, and, moreover, as it seems to be easier to poison a parasite than to deprive its eggs of the power of reproduction by the use of suitable agents, it would appear to be neither practical nor logical to advise a preservative means of treatment. When the period of incubation is ended, the morbid scene really begins. The parasites, millions of which are at work in the interior of the organism, naturally excite an active irritation in the cells, which irritation is manifested by fever, pains in the head, and other symptoms less constant in their manifestation. This is the period of invasion. These microscopic organisms or microphytes, eager for air and light, accumulate near the surface of the body, thus determining certain changes which mark the beginning of another period, called the period of eruption. Divided into groups and fixed in the skin or the mucous membrane, they remain there for some time, exciting a suppurative inflammation which constitutes pustulation; this is only an effort on the part of the organism to eliminate the living or dead bodies of the parasites, and restore the tissues in which they have developed to their primitive condition of integrity and health. With regard to the sulphide of calcium, it participates in the antiparasitic properties of all the derivatives of sulphur, which are decomposed either provisionally or finally, and liberate hydrogen sulphide. The sulphide of calcium is constantly liberating hydrogen sulphide, and the promptness and certainty with which its ingestion is followed by eructations and the characteristic odor of the gas are sufficient proof that the decomposition in question is going on. Sulphide of hydrogen instantly destroys the lower forms of animal life, and if it were inhaled in sufficient volume it would also destroy the higher forms of animal life as well. Its application in the treatment of variola may therefore be understood, and if we add that this gas, on account of its diffusibility, can penetrate every tissue and cell of the body, and in particular can penetrate the surface and be eliminated with the virus of the disease, better than any other product of sulphur, we shall have given the reasons in brief for giving this agent the preference. The indication, furnished by a knowledge of the nature of variola, being to kill all the parasites as soon as they begin to multiply, that is, as soon as the fever appears, and the sulphide of calcium being an agent which can destroy them, it would appear that the conclusion might be drawn that *the application of this medicament to this disease is a rational procedure.* Is this treatment efficacious? Do the facts show that sulphide of calcium in small doses will mitigate the disease, and in large doses will destroy it? Do they show that if it is not given before the germs multiply it has little influence upon the disease, and that if it is interfered with too soon it (the disease) will reappear? Experience, repeated in different places and on different occasions, enables the author to answer these questions in the affirmative. After what has been said in regard to the nature of the determining cause of variola and the properties of sulphide of calcium, certain rules will follow to which the treatment must be conformed in order to be really efficacious. These rules, which might appear to be of secondary importance, are on the contrary quite essential, and, without careful observance of them, the results would not only be doubtful, but they might not be produced at all.

1. *The treatment must be begun when the nature of the disease is suspected.* During an epidemic, chills followed by fever, and acute pain in the head, though there may be no symptom indicating a localization of the disease, will furnish sufficient motive for instituting treatment, and, if this is begun in time, the febrile symptoms of the invasion will almost always be dissipated, and the eruption be prevented. If it is remembered that the parasites announce their multiplication by the symptoms mentioned, and that the more numerous they are the sooner they will work their way to the skin, it will be evident that the opportunity of destroying them at the beginning should not be lost, and that our action should be the more energetic as the period for the eruption approaches. To allow the disease to be established is to lose the best, not to say the only, means for overcoming it easily.

2. *The treatment should be so conducted as to saturate the organism with the parasiticide.* It is evident that the microbes which produce the disease are distributed in all the tissues and involve all the organs, and, consequently, that it is necessary to give the sulphide in sufficient quantity to impregnate the entire organism.

3. *The organism must continue in this condition of saturation until it is certain that the desired effect has been obtained.* If this were not done

the microbes which remained would profit by the armistice which was extended to them, and continue their disastrous invasion, which our imprudence would have made successful, and which would neutralize all the preceding efforts. Besides, as the sulphide of calcium, or the hydrogen sulphide which it liberates, is rapidly eliminated by the skin or by the lungs, if we cease the administration of the remedy, the organism will in a minute be completely at the mercy of the enemies which are attacking it.

4. *Even after the eruption has commenced it can be made to retrograde as long as there is no effusion of liquid in the swellings.* The result in such cases can not be accurately predicted, at least with regard to the complete disappearance of the eruption. Rigorous treatment may be very useful, however, possibly by transforming a confluent into a discrete eruption, and attenuating the disease so that it may be reduced even to a varicella of greater or less severity. The general symptoms promptly disappear, the secondary fever is avoided, and the patient is enabled to bear his disease with as little discomfort as he would a simple eruption. Contrary to that which happens in cases of variola which are untreated, or are treated by the ordinary means, the disease gets better every day, and on the eighth day of the eruption, instead of seeing the patients in a disgusting condition, we find them happy and satisfied, and hopeful of soon leaving the bed which has not been for them a bed of torture.

5. *After pustulation the use of sulphide of calcium will still enable us to ward off complications, to destroy the offensive odor, to reduce the fever, and to attenuate the severity of the disease by hastening the process of desiccation ; but its influence upon the duration of the disease is not so decided as it is in those cases in which it is taken earlier.*

6. *Sulphide of calcium being a substance which has a disagreeable odor, and being required in small*

doses frequently repeated, no preparation of it seems to be more suitable than the dosimetric granules. The granules contain one centigramme each of the substance; patients can take them without trouble, and their great solubility enables one to take them at very short intervals.

7. *The character of the treatment must be regulated by the effect which it is designed to accomplish.* If the patient is still passing through the period of invasion, no eruption having appeared, or the eruption being still slight, no time must be lost, and the patient must at once receive *one or two granules of the remedy, the dose being repeated every quarter-hour.* If the patches of eruption have already appeared, we will be compelled either to seek to retard the disease or to limit ourselves to its attenuation. In the first case we should still give the sulphide of calcium every quarter-hour, re-enforcing its action if necessary by means of salicylic acid. In the second case we should give the granules every half-hour or hour, according to the diffusion of the eruption and the degree of attenuation which is desired. It will be observed that no indication has been given as to the limit of the dosage—one or two granules should be given each time; and this plan should be continued until the desired effect has been obtained. It must be understood, however, that the maximum of saturation is indicated by the vomiting of biliary matter, preceded by a feeling of oppression in the stomach. When these symptoms are present it is not necessary to stop the treatment altogether, for this would be equivalent to rendering all the advantage previously gained of no avail; instead of this, the granules should be given at intervals of half an hour, which will generally suffice to remove all the symptoms of intolerance. After a few hours the doses can again be given at intervals of a quarter of an hour, the object being to keep the organism in a condition of saturation with the drug, without which complete success will

always be a matter of doubt. An evidence of the action of the drug which is frequently seen is profuse perspiration, especially at night. The patient may take soup, milk, or water while he is undergoing medication with the sulphide of calcium, without any disadvantage; the only danger is that which will come from an interruption of the treatment. Should the fever reach 39·15° C. to 40° C., and perspiration be delayed, a granule of aconitine should be given with the calcium every half-hour, and this, by moderating the fever, will facilitate diaphoresis, and soothe the patient. After the disappearance of the fever and the other symptoms, and when we are sure that the organism has come out of the struggle victoriously, we must give Sedlitz Chanteaud to relieve the intestines of the residue of the septic material which has resulted from the fever, and to eliminate from the system the *materies peccans*, in the shape of the remains of the infecting parasites, by which means the patient will be delivered from many dangers and spared many sufferings. Children should be treated in the same general way as adults, that is, the remedy must be continued until the result is obtained. Usually the evidences of saturation will be apparent with them much sooner than with adults, but we must not be frightened by that. The author has given sixty to one hundred and forty granules of the sulphide daily, in doses of one or two granules, without cause for regret, and without particular inconvenience to the patients. An erroneous idea, sustained by tradition but not by facts, may give rise to the fear that this treatment would, sooner or later, prove harmful to those who use it. Usually it is such opinions, which have no substantial foundation, which escape logical discussion and the control of facts. As the marine *algæ*, suspended in the water, yield readily to the impulse of the waves and the force of the currents, but never abandon their first position, so is it preconceived ideas and errors which do not defend themselves before reason and experience, and still are none the less active and respected as authorities of great value. The spirit of modern times repudiates a bare hypothesis, and considers only observation and reason. Observation and reason are on our side, and enough has been said to remove all doubt in this respect. Nevertheless, let us seek to remove all scruples, and to those who object that a variola, the development of which is prevented, may be a source of injury, it may be said in reply: (1) That in the period of invasion, since no variola has been formed, no variola can have entered the organism. (2) That in the period of eruption, since there are not yet any products of exudation in the skin, but only a collection of small localized hyperæmias, the *striking back* of the vesicles is neither to be feared nor even possible, for the vesicles do not yet exist. The danger is not greater than in a case of spontaneous cure of an urticaria. (3) That in the periods of vesiculation and pustulation, the resorption of the contents of the pustules is a matter of great danger; but that just in these periods we are unable to repress the disease. If this point is reached the disease must run its course; and, if our action at this time is of no value, it is also not harmful. (4) That the disappearance of the maculæ, the vesicles, or the pustules being a gradual process, and provoked by internal treatment followed by profuse sweating, does not at all resemble that which occurs when the vesicles appear suddenly and in obedience to external influences. (5) That the demonstration of facts in a matter of this kind being the most trustworthy evidence, those who are skeptical as to the value of this treatment are invited by the author to visit with him his patients who have been enabled to avoid the exudative period of the disease. For all the foregoing reasons the sulphide of calcium in sufficient doses is recommended as the dominant of the treatment from the beginning to the end of the disease, and it is advised in addition that it be also given as a preventive during an epidemic. While it could not be guaranteed that it will prove an effective means of prevention, it may be said that no inconvenience can attend the use of six to twelve granules daily, and it must be influential in preventing the development of the microbes of this disease. It does not always suffice to control the disease rapidly and efficiently in all its periods. The different characteristics which the disease shows in different epidemics, owing to the particular conditions appertaining to the morbific agent, the condition of medium and of individual, as well as the natural phases in the evolution of the disease, should enable us to decide upon the proper agents for the variant of the treatment. Should the malignant character of the epidemic or the excessive development of the bacteria be such that the sulphide of calcium is insufficient, it should be combined with salicylic acid or the salicylates, which have bactericidal properties which are unquestionable. The different phases of the disease, which must not be confused with the periods which have been established by the pathologists, also have particular indications. In the phase of invasion, when there is scarcely any fever or any congestive phenomena, one granule each of the defervescents—aconitine, veratrine, and digitaline—should be given every hour to facilitate the appearance of the eruption and to soothe the pain, which is so troublesome at this time. The vomiting which sometimes occurs during the first days of the fever may interfere with the treatment. In such a case we should give one granule of strychnine and one of hyoscyamine every half-hour, which will render defervescent treatment possible by soothing the irritability of the stomach. Troubles in the nervous system, pain, delirium, convulsions, and dyspnœa will also yield to defervescent agents. Pain in the back may be relieved by one granule of tannate of cannabine every half-hour. When the eruption begins to appear the defervescent treatment must be suspended, the sulphide of calcium and the salicylate of quinine being continued, in order to profit by the remission of fever which accompanies this period. In those cases of variola which are treated dosimetrically from the beginning, one never sees symptoms of a particularly grave character at this period. On the other hand, both cerebral and thoracic troubles may appear at this time if patients have been treated by the expectant method, and, as in all cases in which there is visceral congestion, we should treat these troubles with strychnine and aconitine. The phase of suppuration is certainly the one which is the most perilous for the patient. Would not this be a condition in which Paquet's method of overcoming acute suppuration could be applied? Would it not be proper to administer the arseniate of quinine and iodoform from the beginning of the suppurative process? It is for clinical experience to answer these questions. As yet the facts are too few to give an absolute reply. The sulphide of calcium must not be suspended, but may be given in smaller doses combined with the salicylate of quinine or of iron, strychnine being added to combat the adynamia which frequently occurs, and with serious result, at the time when the eruption appears. If the fever is very high it may be moderated with aconitine and the arseniate of quinine, but without any attempt to remove it altogether. With regard to absorption, it is better to prevent any occasion for it. Asphyxia of the skin, which results from the confluence of the pustules, is, of course, irremediable. During the period of desiccation the digestive functions should be made as active as possible by means of strychnine and quassine, convalescence being thus encouraged. Other agents may also be used for the variant in addition to those which are here mentioned; these are only the principal ones. It will rarely be necessary to formulate a complex treatment. Grave and abnormal cases will become less and less frequent, for therapeutic intervention is always most efficacious at the beginning of diseases, not only because the conditions which then obtain will then yield most readily, but also because many complications can then be prevented, and in that way the gravity of the later phases of the disease can be prevented. Before the days of dosimetry the physician, like the hunter, was forced to wait patiently until the game passed his door and enabled him to see it; then the precipitation of the favorable moment, the consciousness of danger, and the force of the resistance which was offered, were likely to affect the certainty of his aim, and sometimes made him the victim. Nowadays success is more sure, for, in addition to new weapons of precision, we have the means of attacking the beast in his lair and killing him while he is asleep, all the doors of escape having been closed. In most cases it will be sufficient to use the sulphide of calcium with the defervescents during the invasion, and the sulphide of calcium with strychnine or quinine during the eruption. The duration of the disease, in spite of the pathologists who obstinately consider it as fixed with mathematical certainty, as if there were no such thing as therapeutics, will be much abridged by following this plan of treatment. The patient will suffer less, and the family and the physician will be delivered from the fears to which they have heretofore been subjected by a disease in which, according to Jaccoud, death is the rule and recovery the exception. Only the absolute want of efficient means can excuse the physicians of the regular school for their treatment of this disease by the expectant method. In order to have a just opinion of its gravity, we have only to find out whether it is confluent or discrete, and let this be the measure of its mortality. But, though we may admit that we have nothing to fear as to the result in a given case, is there no duty that we should seek to arrest its course? Has the physician no duty to perform in seeking to restore his patient to his family and society and the activities of life as soon as possible? There can no longer be any excuse as to the want of means for treating this disease, for dosimetry offers as good as can be desired. Convenient and agreeable, sure and effective, pure and well prepared, what further qualities can be desired? Do they say that these agents are alkaloids—poisons? That is true for some of them but not for others, and, besides, if they are used in accordance with the rules formulated by Burggraeve, they will always prove to be remedies and never poisons. It is not sufficient to merely administer the granules, one must know *how* to administer them—in other words, one must be a dosimetrist. If the allopaths wish their patients to enjoy the benefits of this therapeutic reform they must abandon the uncertain, obscure, irrational, and superstitious methods which they have followed in the past, and devote themselves to the study and the practice of dosimetry. When more than two thousand physicians express their satisfaction with dosimetry, it is a duty to try it, for how many methods of treatment in allopathy are there with which two thousand physicians will express satisfaction? It is necessary, therefore, to give it a trial, but to try it in a proper manner—that is, as the results of experience obtained from physiological investigation *should* be applied—not as one is in the habit of making therapeutic experiments; in other words, it should be tried in accordance with the rules which were taught and faithfully practiced by the immortal Claude Bernard.

VARIOLA.	DOMINANT.	Parasitic infection .	Sulphide of calcium. Salicylic acid, salicylates.
	VARIANT.	Fever . . .	Aconitine, digitaline, veratrine.
		Vomiting . . .	Sulphate of strychnine, hyoscyamine.
		Delirium . . .	Defervescents.
		Convulsions . .	
		Dyspnœa . . .	
		Rhachialgia . .	Tannate of cannabine.
		Visceral congestion .	Aconitine, sulphate of strychnine.
		Suppuration . .	Iodoform, arseniate of quinine.
		Adynamia . .	Arseniate of strychnine, generous wine.
		Gastric atony . .	Quassine, pepsin.

Vesania.—See Mental Alienation.

Vulvitis.—Inflammation of the mucous membrane included between the *labia majora* and *minora* may be simple or scrofulous in character; phlegmonous, in which case it terminates by suppuration; or gangrenous, if a portion of the mucous membrane becomes mortified, which is usually seen only after parturition. Syphilis and blennorrhagia may also produce vulvitis, the local lesions being received upon the vulva, or being the result of extension from another portion of the genital tract. Their specific treatment has been referred to in connection with other subjects. Simple vulvitis, which is usually caused by repeated irritations, or by traumatisms of one kind or another, has for its dominant aconitine; one granule should be given every two hours. The local pain may be relieved by the use of simple emollient topical applications, such as glycerin or vaseline, or sedatives, such as hydrochlorate of morphine, in a two-per-cent ointment or solution. Phlegmonous vulvitis must be treated by surgical means, by disinfectant applications (e. g., camphorated vaseline), and internally by two granules of iodoform and two of arseniate of quinine every three hours. The same treatment is equally applicable to furuncular vulvitis. Should the inflammation terminate in gangrene, irrigations of camphorated alcohol should be made, and applications of iodoform in powder during the intervals. Internally two granules of salicylate of ammonia should be given every hour to counteract septicæmia. The action of the latter may be aided by the other salicylates, especially the salicylate of quinine, three granules being given at each dose. Scrofulous vulvitis should be treated with such topical absorbents and astringents as subnitrate of bismuth, oxide of zinc, and glycerole of tannin, and the internal use of arseniate of soda and iodoform. Should the pruritus be intolerable, two granules of hydrobromate of cicutine may be given every hour. Should hypersecretion from the mucous membrane persist after the other principal symptoms have been relieved, powdered tannic acid may be used locally, and also internally in two-granule doses four times daily. Adenitis, which often accompanies simple vulvitis, and is a simple glandular inflammation which has been excited by transmission through the lymphatic circulation, should be treated with one granule of aconitine and one of iodoform every two hours.

VULVITIS.	DOMINANT.	Simple vulvitis . .	Aconitine.
		Phlegmonous vulvitis .	Iodoform, arseniate of quinine.
		Gangrenous vulvitis .	Salicylates.
		Scrofulous vulvitis .	Iodoform, arseniate of soda.
	VARIANT.	Pruritus	Hydrobromate of cicutine.
		Hypersecretion of mucus	Tannic acid, topical use of astringents.
		Adenitis	Aconitine, iodoform.

Whooping-cough.—Whooping-cough is one of the numerous diseases which demonstrate the fluctuations of scientific opinions and the uncertainty of therapeutic means. For some, whooping-cough means simply an inflammation of the interglottic ventricle; for others, it means a spasm of the glottis, which may be simple or complicated with laryngitis. The latter attribute it to a hypertrophy of the tracheo-bronchial glands; the former to the influence of a particular parasite. The latter is the opinion which should be accepted, because it is the only one which explains the principal accidents of the disease. Burggraeve states that whooping-cough should be classified with diphtheria, and attributes it to the presence of a *penicillium* in the respiratory passages. Letzerich has been able to discover and cultivate a micrococcus which appears to be the true cause of the disease. The contagious character of the disease, its symptomatology, which is so different from that which is observed in connection with other lesions of the respiratory apparatus, the regular succession of its periods of incubation, development, and disappearance, and the efficacy of antiparasitic means of treatment, fully confirm the parasitic theory of the disease, and enable one to reject all others. The dominant of the treatment will, therefore, be satisfied with the sulphide of calcium, taken regularly and in large doses, in order to keep the organism for some time constantly in an internal atmosphere, as it were, of hydrogen sulphide. Two to five granules of this drug should be given every two hours or oftener, the quantity being regulated by the age, facility in taking it, and tolerance of the patient. Its administration should be commenced when the first spasmodic attack occurs, or even during the catarrhal period if circumstances indicate the probable development of spasmodic catarrh. At the beginning of the disease we may hope to abort it by active and regular treatment. Harmful effects from the sulphide of calcium need not be apprehended, for there are none. There may be nausea produced by the bad odor of the eructations, but that is all. Children can take the granules easily, either triturated with a little sugar or a little milk, or entire, if the children are not too small, and if they are accustomed to dosimetric treatment. To habituate children to taking remedies readily should form a part of their early education; when they are in good health one should occasionally give them a few inert granules or globules, and teach them to swallow them without chewing them. In this way much time and trouble might be spared when they are sick. This advice, which all physicians ought to give to the mothers in their *clientèle*, may seem trifling, but its importance will be thoroughly recognized when one is called to treat a severely sick child, and medication is required which will promptly control it. If the child has previously been taught to swallow the inert granules, he will now have no trouble in swallowing the active ones; on the contrary, one who has not been so taught will take the medicine with difficulty or not at all, and instead of improving may get worse and die, with the medicine which has been left for him within reach. The treatment of this disease should be governed, in some respects, by the period in which it is used. In the catarrhal period we either know the nature of the disease or we do not know it. If we know that it is whooping-cough we should give sulphide of calcium, and, if the catarrhal symptoms are aggravated, a granule of helenine, which is an important agent in the cure of this disease, should be added every two hours. If the diagnosis is doubtful, we should treat the case, especially in the time of an epidemic, as if there were no doubt that it was whooping-cough. Not only is such treatment useful at the beginning of this disease, but it also is decidedly efficacious in all cases of simple catarrh. In the spasmodic period there is an affection of the upper portion of the larynx in addition to the fundamental cause. The simple presence of the micrococci or their secretions produces such an irritability at the peripheral ends of the nerves that the slightest provocation will excite a paroxysm. Crying, motion, a deep breath, in a word, anything which displaces the mucous secretion, or anything that increases the nervous excitability, will suffice to bring on a new attack. This excitability is frequently communicated to the stomach, and vomiting occurs not infrequently with each attack of coughing. This exaggerated condition of contractility should be treated with half a granule or a granule of hyoscyamine or valerianate of atropine three times daily. Should the vomiting be so persistent that the patient suffers for want of alimentation, one or two granules of morphine or codeine must be given before each meal. These remedies must be given until the patient is relieved, unless they are contra-indicated by the patient's age or the cephalic congestion which is induced by the paroxysm. Two granules of the bromide of camphor may also be used with advantage every two hours, its action being analogous to that of helenine. An intermittent character of the paroxysms is in some cases an indication for the use of two granules of the hydroferrocyanate of quinine three times daily, especially when they seem to be provoked by hyperæsthesia of the larynx rather than an accumulation of mucus. If expectoration is abundant two granules of helenine should be given four times daily, and if it is very viscid in character, the helenine should be combined with scillitine. In some cases the heart becomes very irritable or ataxic, owing to the fatigue resulting from the repeated attacks. To soothe and strengthen the heart, two granules of digitaline and two of aconitine should be given every evening. To very young children, one granule of each will be sufficient once or twice daily. If hæmorrhages are easily excited in certain organs in connection with the paroxysms, three granules of ergotine should be given three times daily. Loss of appetite is always a grave complication and must never be neglected. Two granules of quassine should be given three or four times daily, before eating. Nocturnal attacks, on account of the fear which they excite in some children, are a cause of insomnia, and this greatly aggravates the want of equilibrium in the nervous system, which is already seriously compromised by other morbid conditions. The child may be soothed by giving him at bed-time two or three granules of the hydrobromate of morphine, three to five granules of narceine or codeine, or five to eight of the bromide of camphor. Either of these agents may be replaced by three to five granules of croton chloral every evening, if for any reason it is desirable to make a change. As the disease passes away, that is, in its last stage, the pneumogastric nerve appears to be habituated to the contact of the parasites, and consequently does not react with the same violence nor with the same tenacity when irritated. This is the time when we must aid the system to repair the loss and damage which have occurred to it in this long struggle. To tone up the respiratory apparatus we should give two granules of apomorphine three or four times daily. Two granules of the benzoate of soda and two of the benzoate of ammonium may also be used for the same purpose four times daily. For general debility, if the child be very young, we should give one granule of the hypophosphite of strychnine or of brucine three times daily. To overcome the anæmia two granules of the hypophosphites of soda and of lime should be given at each meal, and equal quantities of the phosphate of iron. The most frequent complications are bronchitis and broncho-pneumonia, both of which are of exceedingly grave import. The ordinary treatment of these inflammations should be modified by bringing the tonics brucine and apomorphine into the list of therapeutic agents. The treatment which is recommended for this disease can therefore be summarized in a few words. For dominant, the sulphide of calcium combined with helenine for the catarrhal element, and bromide of camphor for the spasmodic. For variant, those agents should be used which, while increasing synergically the efficiency of the dominant, will find their particular application in the modification of the symptoms. It must also be remembered that this disease is often exceedingly rebellious, now because it was not suitably attacked at its beginning, and again because sufficient care has not been taken in observing the precautions which are indispensable, for it is very important that the patients should have an abundance of pure air, and, at the same time, that they should not take cold. Parents and friends, seeing no change in the patient's condition after several days of treatment, are impatient to have it changed, though they may be perfectly well aware that the disease is always of long duration. The physician must satisfy the impatience of the family by modifying the variant, but he must not interfere with the dominant. The final result will always be in favor of dosimetric treatment. The classical method of treating whooping-cough is a chaos. Owing to culpable condescensions and the requirements of different families, it no longer has any remedy in which it confides. It stops the use of a drug before it has produced its effects. How can any conclusion be drawn from such practice? The agents which are most approved are hydrocyanic acid and emetics. The first, advised by West, is uncertain and dangerous; the others, while they may sometimes be useful and soothing to the patients, are in the end harmful, because they weaken and depress the activity of the pneumogastric. Only in exceptional cases, when asphyxia is extreme and suffocation imminent because the patient can not expel the mucus, are emetics indicated. In such cases three granules of emetine dissolved in a little warm water should be given every ten minutes until the desired relief is obtained. Emetic medication has well-defined indications, but it should never be regarded as curative treatment.

WHOOPING-COUGH.

DOMINANT.	Parasitic element		Sulphide of calcium.
VARIANT.	Catarrhal period.	Catarrhal element.	Helenine.
		Spasmodic element	Bromide of camphor.
	Spasmodic period.	Spasm of the glottis	Hyoscyamine, valerianate of atropine.
		Irritability of the larynx	Bromide of camphor.
		Intermittence in the attacks	Hydroferrocyanate or hydrobromate of quinine.
		Viscid expectoration	Scillitine.
		Inability to expectorate	Emetine.
		Cardiac ataxia	Digitaline.
		Hæmorrhage	Ergotine.
		Insomnia	Narceine, codeine, croton chloral.
		Want of appetite	Quassine.
		Vomiting	Morphine.
	Period of disappearance	Atony of the vagus	Apomorphine.
		Catarrhal hypersecretion	Benzoate of ammonia.
		General debility	Brucine, hypophosphite of strychnine.
		Anæmia	Phosphate of iron. Hypophosphites of lime and of soda.

THE END.

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